Field Oversight Activities Report (13 – 31 August 2010)

Gulfco Marine Maintenance Site
Freeport, Brazoria County, Texas
EPA Identification No. TXD055144539

Remedial Action Contract 2 Full Service
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Prepared for

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1.0 INTRODUCTION

This Field Oversight Activities Report summarizes remedial investigation/feasibility study (RI/FS) oversight activities conducted from 13 – 31 August 2010 at the Gulfco Marine Maintenance (Gulfco) Superfund site, located in Freeport, Brazoria County, Texas. As requested by the U.S. Environmental Protection Agency (EPA), EA Engineering, Science, and Technology, Inc. (EA) performed oversight of sediment, pore water, and surface water sampling activities conducted by Benchmark Ecological Services, Inc. (Benchmark), a subcontractor to URS Corporation (URS) for this portion of the project, which in turn is working under the direction of the potentially responsible party (PRP)'s primary consultant, Pastor, Behling & Wheeler, LLC (PBW). Additionally, EA obtained six split samples of sediment, as directed by Mr. Gary Miller, EPA Task Order Monitor.

During field oversight activities, EA is required to evaluate and document PRP performance of field work and confirm PRP adherence with applicable standard operating procedures (SOPs) and the following EPA-approved documents:

- URS's Final Baseline Ecological Risk Assessment Work Plan and Sampling and Analysis Plan (URS 2010)
- PBW's Memorandum: "Advance Notice of Baseline Ecological Risk Assessment Field Activities, Gulfco Marine Maintenance Site, Freeport, Texas." (PBW 2010).

Section 2 summarizes oversight and split sampling activities associated with the 24 June 2010 wetlands sediment sampling event. Appendix A contains a photographic record of field activities performed, and Appendix B contains a copy of field notes recorded during field oversight activities.

2.0 FIELD ACTIVITIES

Field activities conducted by Benchmark included the collection of wetlands sediment samples, Intracostal Waterway Channel (ICWWC) sediment samples, wetlands surface water samples, and collection and processing of wetland and ICWWC pore water sediment samples. Where applicable, field parameters of sediment and water were also collected by Benchmark. The samples collected by Benchmark during this field effort were submitted for applicable site-specific contaminant of concern analyses, as well as for toxicity testing.

Benchmark also conducted daily health and safety meetings. The Benchmark crews working at the site conducted the work in a safe manner, and in most cases, the work performed in a manner consistent with SOPs and plans developed for the project. The following subsection discusses these activities in greater detail on a day by day basis.

2.1 Summary of Daily Oversight for Sampling Activities

The following subsections describe oversight if field activities performed on a daily basis.

13 August 2010

On 13 August 2010, EA mobilized to the field and initiated oversight of wetland sediment sampling activities performed by Benchmark, and also collected five split samples from wetland sediment sample locations as directed by EPA. EA arrived on site at 9:15. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Ryan Zak, Benchmark
- Mr. Brett Sutton, Benchmark
- Mr. Duane Thomas, EA, Environmental Scientist
- Mr. Mike Chanov, EA, Environmental Scientist (arrived at site at 11:10)
- David Lingle, URS (arrived on site at 12:13)
- Margaret Roy, URS (arrived on site at 12:13)

The Benchmark field crew had mobilized to the site on 12 August 2010, and had initiated field work which included collection of wetland sediment samples from several sample locations, including EWSED02, EWSED05, and EWSED06. Split samples of the wetland sediment collected from these locations had originally been planned. However, due to Benchmark sampling these locations prior to EA's arrival, two of the split sample locations were replaced with sample locations EWSED03 and EWSED04, while EWSED02 was removed from the planned spilt wetland sediment sample list.

Table 1 provides a summary of wetland sediment sampling activities that occurred on 13 August 2010. The wetland sediment samples were collected by Benchmark using a stainless steel trowel, and were collected from surface to a maximum depth of six inches below surface grade. The collected sediment was placed in laboratory-supplied three-gallon buckets, and then homogenized using a stainless steel mixing head powered by a drill. Once homogenized, the samples were transferred to sample jars. Photographs 1 and 2, Appendix A, illustrate sediment sampling methods utilized by Benchmark for collection of wetland sediment samples.

At most of the wetland sediment sample locations approximately one to two inches of organic sediment was encountered, followed by a layer of red clay. Photograph 3, Appendix A, is a representative view of the wetlands sediment encountered at the site. At wetland sediment sample location NAS01, metallic scale/shavings were encountered at the surface, and a decision was made by the URS personnel visiting the site to remove this material and then collect the sediment sample. Once this material was removed, Benchmark proceeded with sample collection and encountered hard-packed sediment and the presence of large metal particles, the latter of which were removed from the sample. During collection and homogenization of this sample, EA stressed the need for the sample to be adequately homogenized, so they were not collecting a sediment sample representative of only the upper portion of the sample area. Organic/root fragments, glass chips, and other debris were also removed from the material while it was being transferred to sample jars.

Benchmark ceased field sampling activities at 12:50 in order provide a tour of the site to David Lingle and Margaret Roy with URS, and to package samples for shipment. EA completed

processing and packaging of split wetland sediment samples at 1445 hours and delivered the packed sample cooler to Federal Express for overnight (for Saturday delivery) to Test America Laboratories.

TABLE 1 SUMMARY OF WETLAND SEDIMENT SAMPLES (13 AUGUST 2010)

Sample Location	Date	Sample Time	EA Split Sample Location
EWSED08	13 August 2010	09:35	----
EWSED03	13 August 2010	10:23	EWSED03 (PAHs and Metals)
EWSED04	13 August 2010	10:51	EWSED04 (PAHs and Metals)
EWSED07	13 August 2010	11:25	EWSED07 (PAHs and Metals)
NAS01	13 August 2010	12:32	NAS01 (Metals)
NAS01 (Dup)	13 August 2010	12:32	NAS01 Dup (Metals)

As documented in Table 1, EA collected five split samples as part of the 13 August 2010 field oversight activities. A chain of custody for these samples was completed for the samples, with the specified analytes being poly aromatic hydrocarbons by EPA Method 8270 C (samples EWSED03, EWSED04, and EWSED07). Additionally, all of the split samples were analyzed for RCRA 8 metals (plus copper, nickel, and zinc) by EPA Method 6010B/6020. The samples collected by EA were labeled, packed in an ice-chilled cooler, and the chain of custody for the samples were placed in the cooler in a Ziploc bag, prior to sealing and placing custody seals on the cooler for shipment to Test America Laboratories.

16 August 2010

On 16 August 2010, EA arrived at the Site at 1436 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA, Environmental Scientist

From 1430 to 1520 hours, the Benchmark field crew decontaminated field sampling equipment and prepared field blanks in preparation for the day's sampling event. Field activities for the day consisted of Benchmark collecting wetland sediment samples. These sediment samples were collected and handled in the same manner as those wetland sediment samples collected 13 August 2010. Table 2 provides a summary of wetland sediment sampling activities that occurred on 16 August 2010.

TABLE 2 SUMMARY OF WETLAND SEDIMENT SAMPLES (16 AUGUST 2010)

Sample Location	Date	Sample Time	EA Split Sample Location
NAS02	16 August 2010	15:28	----
NAS03	16 August 2010	16:00	----
NAS05	16 August 2010	16:18	----
NAS04	16 August 2010	16:50	----
NAS06	16 August 2010	17:00	----

Sediment collected by Benchmark from sample collection area NAS05 was inadvertently placed in an unlabeled jar. This situation was corrected by using a correctly labeled jar for the sample, and returning the soil in the unlabeled jar back to the NAS05 sample location. At sample location NAS04, Benchmark was only able to sample to a depth of three inches due to the presence of cobbles and stones at this sample location. Field work for the day was completed at 1725 hours.

17 August 2010

On 17 August 2010, EA arrived at the Site at 0800 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA, Environmental Scientist

From 0805 to 0840 hours, the Benchmark field crew decontaminated field sampling equipment and prepared field blanks in preparation for the day's sampling event. Field activities for the day consisted of Benchmark collecting wetland sediment samples. The sediment samples were collected and handled in the same manner as wetland sediment samples collected 13 and 16 August 2010. Table 3 provides a summary of wetland sediment sampling activities that occurred on 17 August 2010.

TABLE 3 SUMMARY OF WETLAND SEDIMENT SAMPLES (17 AUGUST 2010)

Sample Location	Date	Sample Time	EA Split Sample Location
NAS07	17 August 2010	09:00	----
NAS08	17 August 2010	09:31	----
NAS09	17 August 2010	10:02	----

Sediment collected from sample collection area NAS08 was of a consistency that it did not mix well during homogenization prior to containerization. At 1030 hours, Benchmark halted wetland sediment sampling activities in order to process and ship the collected samples. At 1530 hours, the field crew met back on site and conducted a reconnaissance for the ICWWC sample locations. No further sample collection occurred for the day; the field crew left the site at 1637 hours.

18 August 2010

On 18 August 2010, EA arrived at the Site at 0850 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA, Environmental Scientist

Field activities for the day consisted of Benchmark collecting ICWWC sediment samples utilizing a sampling boat equipped with a ponar sampler. Two to eight ponar grab samples were collected from a 10 foot radius representative of each sample location marked in the channel with a rod. Water accumulated on top of each sediment sample collected with the ponar sampler was decanted using a peristaltic pump, and the sediment was transferred from the ponar sampler to a laboratory-supplied bucket, using a sampling spoon. While removing the grab samples from the ponar sampler, Benchmark exercised care not to retrieve sediment in contact with the sides of the ponar sampler. A stainless steel mixer, powered by a drill, was used to homogenize the ICWWC sediment samples. The homogenized sample was then transferred to laboratory supplied sample buckets or sample jars and were placed in an ice-chilled cooler. Sampling equipment was decontaminated using soap and de-ionized water. Excess sediment not retained for analysis was returned to each sample location. Photographs 4 through 8, Appendix A, illustrate ICWWC sediment sample collection and handling techniques utilized by Benchmark.

Table 4 summarizes sediment samples collected from the ICWWC on 18 August 2010. During sample collection at EIWSED06, sampling activities had to temporarily be halted from 1452 to 1503 hours to allow sediment disturbed by the boat to settle. Only two of the four sampling attempts at this location were successful in retrieving sediment.

TABLE 4 SUMMARY OF INTRACOASTAL WATERWAY SEDIMENT SAMPLES (18 AUGUST 2010)

Sample Location	Date	Sample Time	Number of Ponar Samples	Field Parameters	EA Split Sample Location
EIWSED03	18 August 2010	08:11 to 08:59	3 (four ponar samples collected; only three retained)	pH: 6.90 Temperature: 31.1 °C ORP: -10.8 mV	----
EIWSED02	18 August 2010	09:10-09:48	3	pH: 6.80 Temperature: 31.3 °C ORP: -4.5 mV	EIWSED02
EIWSED01	18 August 2010	10:30-11:32	8	pH: 6.70 Temperature: 31.4 °C ORP: 2.6 mV	----
EIWSED04	18 August 2010	11:56 – 12:10	2	pH: 6.86 Temperature: 31.4 °C ORP: -6.5 mV	----
EIWSED05	18 August 2010	12:23-12:45	Not Recorded	pH: 6.89 Temperature: 31.5 °C ORP: -8.5 mV	----
EIWSED06	18 August 2010	14:37-15:15	2	pH: 7.04 Temperature: 31.9 °C ORP: -19.3 mV	----
EIWSED07	18 August 2010	16:00-16:30	2	pH: 6.82 Temperature: 31.8 °C ORP: -4.3 mV	----

On 18 August 2010, Benchmark also collected water quality parameters at multiple depths for each of the ICWWC sediment sample locations. Table 5 summarizes these collected water quality parameters. Photograph 9, Appendix A, is a representative view of the field equipment

Benchmark utilized for collection of water quality parameters. Field work for the day ceased at 1700 hours. EA completed the chain of custody, and packaged and dropped off the EIWSED02 split sample cooler at Federal Express for overnight delivery of the sample to Test America. Split sediment sample EIWSED was analyzed for PAHs by EPA Method 8270C.

TABLE 5 SUMMARY OF WATER QUALITY PARAMETERS COLLECTED FROM INTRACOASTAL WATERWAY SEDIMENT SAMPLE LOCATIONS (18 AUGUST 2010)

Sample Location/ Time	Depth	Temperature (^{o}C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
EIWSED03 09:47-09:56	1 ft 9 in	30.80	43,600	25.20	8.09	4.76	123.8
	1 ft	30.16	43,900	25.19	8.03	4.81	19.9
EIWSED02 09:59-10:08	3 ft 6 in	30.09	43,660	25.24	8.06	4.35	74.9
	1 ft	30.15	43,680	25.23	8.01	4.29	53.6
EIWSED01 11:35-11:39	6 ft 9 in	30.11	43,940	25.40	7.99	5.74	41.0
	4 ft	30.11	43,940	25.42	7.98	5.39	33.7
	1 ft	30.11	43,940	25.41	7.97	5.11	29.6
EIWSED04 12:55-13:03	1 ft 4 in	30.47	44,180	25.40	7.95	4.70	0.7
EIWSED05 12:50-12:53	2 ft 6 in	30.40	40,020	25.40	7.96	5.90	NA
	1 ft	30.62	39,960	25.35	7.97	5.15	7.9
EIWSED06 15:20-15:27	3 ft 6 in	31.59	42,950	24.00	7.97	7.23	-22.4
	1 ft	31.51	38,210	24.10	8.01	6.60	-16.3
EIWSED07 16:36-16:39	6 ft 3 in	31.62	42,840	23.95	8.07	6.95	-14.5
	3 ft	31.63	42,770	23.92	8.06	6.94	-21.8
	1 ft	31.63	42,690	23.88	8.04	6.86	-21.4

19 August 2010

On 19 August 2010, no field sampling occurred. However, a site reconnaissance of the wetlands sediment sample locations was performed to evaluate whether or not these sample locations contained sufficient pore water for the planned pore water sampling event. Due to rainy conditions, the reconnaissance was postponed until 1300. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA Environmental Scientist

The reconnaissance was conducted from 1420 to 1453 hours. Table 6 provides a summary of wetland sediment sample conditions observed during the site reconnaissance.

TABLE 6 SUMMARY OF WETLAND SEDIMENT SAMPLE LOCATIONS FOR PRESENCE OF PORE WATER PER SITE RECONNISSACNE (19 AUGUST 2010)

Sample location	Condition
EWSED01	Wet all the way to the surface with some overlying water
EWSED02	Wet all the way to the surface with some overlying water
EWSED03	Moist all the way from surface to below six inches beneath surface
EWSED04	Moist all the way from surface to below six inches beneath surface
EWSED05	Moist all the way from surface to below six inches beneath surface
EWSED06	Moist all the way from surface to below six inches beneath surface
EWSED07	Moist all the way from surface to below six inches beneath surface
EWSED08	Wet all the way to the surface with some overlying water
EWSED09	Moist all the way from surface to below six inches beneath surface
EWSW01	Wet all the way to the surface with some overlying water
EWSW04	Wet all the way to the surface with some overlying water

20 August 2010

On 20 August 2010, EA arrived at the Site at 0730 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA Environmental Scientist

Field activities for the day consisted of Benchmark collecting sediment pore water samples from the ICWWC sediment sample locations. The sediment samples were collected using the same equipment and methodologies as those used for ICWWC sediment samples collected on 18 August 2010. Water was decanted off the top of the sediment samples using a peristaltic pump. Two five gallon buckets of sediment were collected at each sample location in order to provide a sufficient volume of material to extract and sample pore water contained in the sediment. As part of the sampling activities, Benchmark also collected water quality parameters at each of the sediment sample locations during collection of the sediment samples for pore water extraction and sampling. Table 7 summarizes the sediment samples collected from the ICWWC for pore water extraction and sampling, and Table 8 summarizes the water quality parameters collected as part of this sampling event.

TABLE 7 SUMMARY OF INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (20 AUGUST 2010)

Sample Location	Date	Sample Time	Number of Ponar Samples	Field Parameters	EA Split Sample Location
EIWSED03PW	20 August 2010	10:10 to 10:40	4	pH: 7.07 Temperature: 30.3°C ORP: -21.2 mV	----
EIWSED02PW	20 August 2010	09:25-09:45	Not Recorded	pH: 7.01 Temperature: 30.2 °C ORP: -16.5 mV	----
EIWSED01PW	20 August 2010	08:20-08:50	4	pH: 7.21 Temperature: 30.2 °C ORP: -28.2 mV	----

TABLE 8 SUMMARY OF WATER QUALITY PARAMETERS FOR INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (20 AUGUST 2010)

Sample Location/ Time	Depth	Temperature (°C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
EIWSED03PW 10:40	1 ft 5 in	29.18	43,290	27.76	7.74	5.50	6.6
EIWSED02PW 09:48	3 ft 6 in	28.89	46,720	27.92	7.76	5.24	-87.5
	1 ft	28.87	46,700	27.90	7.76	5.03	-90.0
EIWSED01PW 09:00-09:10	6 ft	28.80	46,710	27.99	7.76	4.79	-34.5
	3 ft	28.80	46,710	27.94	7.76	4.82	-49.4
	1 ft	28.81	46,680	27.94	7.76	4.62	-56.1

At 1104 hours, Benchmark arrived back at the boat dock and placed the collected sediment samples on ice. At 1113 hours, Benchmark homogenized sediment sample EIWSED01PW in a manner consistent with the ICWWC sediment samples collected and homogenized 18 August 2010 (Photograph 8, Appendix A).

Photographs 10 through 14, Appendix A, illustrate techniques utilized by Benchmark to extract and collect sediment pore water samples, and these techniques are described in the subsequent sections of this document. Following homogenization, the sediment sample was transferred from the sample bucket to 750 ml nalgene sample bottles using decontaminated stainless steel spoons. At 1130 hours, twelve of the centrifuge bottles containing the sediment were loaded into three centrifuges. The samples were spun at approximately 3,500 revolutions per minute (rpms) for 15 minutes.

From 1143 to 1158 hours, Benchmark recovered the pore water that had separated from the sediment using a syringe. The extracted pore water was then filtered to remove suspended solids. Once the pore water had been extracted from the sample bottles, the spent sediment was removed from the sample bottles using the stainless steel spoon and the centrifuge bottles were re-filled with new sediment. Benchmark did not rinse bottles between centrifuge runs involving

extraction of the same pore water sample. The process of extracting pore water from the EIWSED01PW sediment sample continued until 1320 hours, when pore water had been obtained from the first bucket containing the EIWSED01PW sediment. Excess water not needed to fill the first pore water sample container was transferred into the next round of bottles to be used for the EIWSED01PW pore water sample.

At 1300 hours Benchmark homogenized the second bucket of EIWSED01PW sediment and centrifuged this material until the required volume of water had been obtained from the sediment. The pore water obtained from the two buckets of EIWSED01PW was combined, homogenized, and placed in a 20 liter sample container.

From 1510 to 1530 hours, Benchmark decontaminated equipment. From 1531 to 1740 hours, Benchmark homogenized, centrifuged, and collected and filtered sediment pore water from the EIWSED02PW sediment sample in the same manner described for EIWSED01PW. Equipment was decontaminated at the completion of the pore water extraction/collection activities.

From 1714 to 2020 hours, Benchmark homogenized, centrifuged, collected, and filtered sediment pore water from the EIWSED03PW sediment in the same manner described for EIWSED01PW. A three liter volume of pore water was collected for analysis, as was a three liter volume to be used for a MS/MSD sample. Equipment was decontaminated at the completion of the pore water extraction/collection activities. At 2026 hours, the pore water samples were placed in bags and placed in an ice-chilled cooler. Field crews left the site for the day at 2035 hours.

21 August 2010

On 21 August 2010, EA arrived at the Site at 0720 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA, Environmental Scientist

At 0830 hours, Benchmark returned the spent ICWWC pore water sediment samples collected/processed 20 August 2010 to each of their respective sample locations. The remaining field activities for the day consisted of Benchmark collecting sediment pore water samples from two of the ICWWC sediment sample locations. The sediment samples to be used for pore water collection were obtained using the same equipment and methodologies as described for the collection of previous ICWWC sediment samples. As with the sediment samples collected for pore water extraction on 20 August 2010, water was decanted off the top of the sediment samples using a peristaltic pump and two five gallon buckets of sediment were collected at each sample location in order to provide a sufficient volume of material to extract and sample the pore water contained in the sediment. As part of the sampling activities, Benchmark also collected water quality parameters at each of the sediment sample locations during collection of the sediment samples for pore water extraction and sampling. Table 9 summarizes the sediment

samples collected from the ICWWC for pore water extraction and sampling, and Table 10 summarizes the water quality parameters collected as part of this sampling event.

TABLE 9 SUMMARY OF INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (21 AUGUST 2010)

Sample Location	Date	Sample Time	Number of Ponar Samples	Field Parameters	EA Split Sample Location
EIWSED05PW	21 August 2010	08:40 to 09:10	4	pH: 6.25 Temperature: 29.8°C ORP: 28.4 mV	----
EIWSED04PW	21 August 2010	09:20-09:46	Not Recorded	pH: 6.37 Temperature: 29.5 °C ORP: 19.4 mV	----

TABLE 10 SUMMARY OF WATER QUALITY PARAMETERS FOR INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (21 AUGUST 2010)

Sample Location/ Time	Depth	Temperature (°C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
EIWSED05PW 09:48	3 ft	28.27	43,820	28.17	7.95	5.08	35.4
	1 ft	28.24	43,810	28.16	7.94	4.74	14.3
EIWSED04PW 09:53	2.8 ft	28.20	46,520	28.18	7.94	4.05	1.4
	1 ft	28.25	46,570	28.18	7.94	4.19	-2.9

At 1014 hours, Benchmark arrived back at the boat dock and placed the collected sediment sample on ice. From 1018 hours, Benchmark homogenized sediment sample EIWSED05PW and extracted and filtered sediment pore water using the same equipment and methodologies as described for the pore water samples extracted on 20 August 2010. At 1312 hours, Benchmark completed extraction of a sufficient volume of pore water from the EIWSED05PW sediment, and placed the pore water sample in sample containers. A duplicate of the pore water sample was also containerized.

From 1432 to 1435 hours, Benchmark decontaminated sampling equipment. From 1436 to 1646 hours, Benchmark extracted and filtered pore water from the EIWSED05PW sediment sample and transferred the pore water into appropriate sample containers. At 1703 hours, the field crew left for the day.

22 August 2010

On 22 August 2010, EA arrived at the Site at 0720 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark

- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA, Environmental Scientist

The field activities for the day consisted of Benchmark collecting sediment pore water samples from one ICWWC sediment sample location and processing of the sample. Only one sample was collected and processed due to the lack of additional filters needed to process additional samples; the filters could not be obtained until 23 August 2010. The one sediment sample collected for the day (EIWSED06PW) was obtained using the same equipment and methodologies as described for the collection of previous ICWWC sediment samples. As with the sediment samples collected for pore water extraction on 20 - 21 August 2010, water was decanted off the top of the sediment samples using a peristaltic pump and two five gallon buckets of sediment were collected at the sample location in order to provide a sufficient volume of material to extract and sample the pore water contained in the sediment. As part of the sampling activities, Benchmark also collected water quality parameters at the sediment sample locations during collection of the sediment samples for pore water extraction and sampling. Table 11 summarizes the sediment sample collected from the ICWWC for pore water extraction and sampling, and Table 12 summarizes the water quality parameters collected as part of this sampling event.

TABLE 11 SUMMARY OF INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (22 AUGUST 2010)

Sample Location	Date	Sample Time	Number of Ponar Samples	Field Parameters	EA Split Sample Location
EIWSED06PW	22 August 2010	08:25 to 09:17	Not Recorded	pH: 6.77 Temperature: 29.5°C ORP: -1.3 mV	----

TABLE 12 SUMMARY OF WATER QUALITY PARAMETERS FOR INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (22 AUGUST 2010)

Sample Location/ Time	Depth	Temperature (°C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
EIWSED06PW 09:13	4.9 ft	28.11	43,570	27.99	8.09	4.87	47.7
	3 ft	28.11	43,570	28.00	8.15	4.73	33.1
	1 ft	28.11	43,570	27.99	8.16	4.52	30.4

At 0922 hours, Benchmark arrived back at the boat dock and placed the collected sediment sample on ice. At 0940 hours, Benchmark homogenized sediment sample EIWSED06PW and extracted and filtered sediment pore water using the same equipment and methodologies as described for the pore water samples extracted on 20 -21 August 2010. At 1151 hours, Benchmark completed extraction of a sufficient volume of pore water from the EIWSED06PW sediment, and placed the pore water sample in the appropriate sample containers at 1154 hours. At 1215 hours, the field crew left for the day.

23 August 2010

On 23 August 2010, EA arrived at the Site at 0820 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Mike Chanov, EA, Environmental Scientist
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark re-collecting reference sediment samples NAS07, NAS08, and NAS09; the samples collected from these locations on 17 August 2010 arrived at the laboratory at a temperature outside acceptable quality control criteria. One wetland sediment sample, which was to be used for pore water extraction, was also collected. From 0820 to 0900 hours, Benchmark prepared for sediment sampling event. From 0908 hours to 0944 hours, Benchmark collected the sediment samples using six inch trowels and placed in five gallon, laboratory-supplied buckets. The sediment was then mixed with a trowel, and sediment collected for the reference samples was transferred from the bucket into sample jars using spoons. The one marsh sample collected for pore water extraction was left in the collection bucket. Sampling equipment used to collect and handle the sediment samples had been decontaminated prior to use at each sample location. Excess sediment not required for pore water extraction was returned to its respective sample location. The sediment samples were homogenized using equipment and methodologies consistent with those described during previous wetlands sediment sampling events. Table 13 provides a summary of the sediment samples collected on 23 August 2010.

TABLE 13 SUMMARY OF WETLANDS SEDIMENT SAMPLES COLLECTED AS REFERECNE SAMPLES OR FOR PORE WATER EXTRACTION AND COLLECTION (23 AUGUST 2010)

Sediment Sample (Sample Purpose)	Collection Time
NAS07 (Reference Sample)	09:08
NAS08 (Reference Sample)	09:17
NAS09 (Reference Sample)	09:23
EWSED01PW (Pore Water Extraction)	09:33 – 09:44

At 0953 hours, Benchmark arrived back at the sample processing area and placed the collected wetland samples in ice-chilled coolers. Due to a lack of a sufficient number of filters for filtering the extracted wetland sediment pore water, from 0955 to 1132 hours, Benchmark performed a pore water extraction test for the EWSED01PW sediment in order to evaluate how effectively pore water could be extracted from wetland sediment. This material was returned to the sample location following completion of the extraction test, with the plan to re-collect the pore water sample from this location later in the week.

A decision was made by Benchmark to go back to each of the wetland sediment sample locations, and fill two bottles utilized to centrifuge sediment from each of the sample locations. These samples were collected and placed in a five gallon bucket with decontaminated trowels, then homogenized and placed in the two centrifuge bottles collected for each sample location.

Following collection, the samples were centrifuged to evaluate the effectiveness of pore water extraction from the wetland sediment sample locations. From 1231 to 1430 hours, Benchmark conducted the pore water extraction test by centrifuging each set of sample jars from each sample location for a period of 30 minutes at 3,500 rpms. At 1430 hours, the results of the extraction test was observed and recorded. Table 14 provides a summary of the sediment samples collected for the extraction test.

TABLE 14 SUMMARY OF WETLANDS SEDIMENT PORE WATER EXTRACTION TEST (23 AUGUST 2010)

Sediment Sample	Collection Time	Results/Comments
EWSED03PW	11:38 – 11:40	No pore water observed in centrifuged sample
EWSED06PW	11:43	No pore water observed in centrifuged sample
EWSED07PW	11:52 – 11:53	Some water observed in centrifuged sample
EWSED04PW	11:59	Some water observed in centrifuged sample; was able to extract approximately 15 ml from Bottle A, and 15 ml from Bottle B
EWSED09PW	12:10	No pore water observed in centrifuged sample
EWSED05PW	12:17	No pore water observed in centrifuged sample

Benchmark then re-centrifuged the EWSED04PW test samples for 30 additional minutes, and extracted approximately 15 ml of additional pore water from Bottle A, and 10 ml of additional pore water from Bottle B. From 1450 to 1525 hours, test bottles for both EWSED04PW and EWSED07PW were centrifuged for 30 minutes. Field crews reported a cumulative volume of 40 ml pore water recovery for EWSED04PW B test bottle. The field crew left the site for the day at 1645 hours.

24 August 2010

On 24 August 2010, EA arrived at the Site at 0800 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark collecting wetland sediment samples for Acid Volatile Sulfides/Simultaneously Extracted Metal (AVS/SEM) analyses, and returning ICWWC sediment used to extract pore water to their respective sample locations. From 0802 to 0850 hours, Benchmark decontaminated sampling equipment, collected equipment rinsate blanks, and loaded necessary sampling equipment and field supplies onto an all terrain vehicle (ATV).

Photographs 15 through 18, Appendix A, illustrate techniques utilized by Benchmark to collect and process AVS/SEM samples. At 0855 hours, Benchmark arrived at sample location EWSED04 and initiated collection of the sediment sample for AVS/SEM analysis. This was achieved by taking an acetate tube two inches in diameter by six inches in length, and capping

the top end of the tube. A hole was made in the cap to allow air to escape as the acetate tube was advanced into the subsurface. Benchmark then placed a board over the capped end of the tube, and used a hammer to drive the acetate tube into the subsurface to a depth of six inches below surface grade. They then used a trowel to dig around the outside of the tube and remove the surrounding soil so that the tube could be retrieved. A member of the Benchmark then transferred the collected soil core back to the sample processing area where the ends of the tube were cut, capped, and sealed to ensure no headspace existed in the sample tube. Processing and sealing of the sample tube for EWSED04 occurred immediately after collection of this soil core; the remaining cores were processed from 1110 to 1205 hours following collection of the soil cores in the field. Benchmark also collected temperature, pH, and ORP for the sediment sample location. Benchmark also decontaminated field equipment used to collect soil sample. Table 15 provides a summary for wetland sediment samples collected for AVS/SEM analysis.

TABLE 15 SUMMARY OF WETLAND SEDIMENT SAMPLES COLLECTED FOR AVS/SEM ANALYSIS (24 AUGUST 2010)

Sample Location	Date	Sample Time	Field Parameters
EWSED04	24 August 2010	09:03 (Benchmark marked sample time 08:55)	pH: 6.65 Temperature: 30.8°C ORP: Not Recorded
EWSED07	24 August 2010	09:30	pH: 6.80 Temperature: 31.3 °C ORP: 216.2 mV
EWSED03	24 August 2010	09:44	pH: Not collected by Benchmark Temperature: 30.2 °C ORP: Not collected by Benchmark
EWSED06	24 August 2010	09:53	pH: 7.19 Temperature: 31.7 °C ORP: 176.1 mV
EWSED02	24 August 2010	10:05	pH: 6.43 Temperature: 31.4 °C ORP: 10.2 mV
EWSED01	24 August 2010	10:23	pH: 6.85 Temperature: 30.6 °C ORP: -18.0 mV
EWSED09	24 August 2010	10:32	pH: 6.98 Temperature: 37.3 °C ORP: 80.5 mV
EWSED08	24 August 2010	10:42	pH: 6.95 Temperature: 31.7 °C ORP: 10.6 mV
EWSED05	24 August 2010	10:54	pH: 6.23 Temperature: 37.8 °C ORP: 63.4 mV

From 1330 to 1509 hours, Benchmark emptied centrifuge bottles that contained sediment used to extract pore water from the ICWWC sediment samples. This material was placed in its respective sample bucket, and then the sample buckets were loaded onto a boat, and the sediment from each sample location was returned to its respective ICWWC sediment sample location. At 1515 hours, the field crew left the site for the day.

25 August 2010

On 25 August 2010, EA arrived at the Site at 0735 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark extracting/collecting a sediment pore water sample for ICWWC sediment location EIWSED07, and from wetland sediment sample location EWSED08. From 0750 to 0830 hours, Benchmark decontaminated field equipment, collected equipment rinsate blanks, and loaded necessary field equipment and supplies on the sampling boat. During this time, Benchmark indicated that they did not submit a equipment rinsate blank associated with the AVS/SEM sediment sample analysis due to the laboratory indicating it could only run the AVS/SEM analysis for solids, and not for liquids.

From 0837 to 0913 hours, Benchmark collected ICWWC sediment sample EIWSED07PW for pore water extraction/collection. Five grab samples of sediment were collected and homogenized in a manner consistent with other ICWWC sediment samples collected on the previous days of this documented field effort. Benchmark also collected water quality from the EIWSED07PW sample location. Buckets containing the collected sediment were placed in an ice-chilled cooler following collection. Table 16 summarizes sediment sample EIWSED07PW, which was collected from the ICWWC for pore water extraction and sampling, and Table 17 summarizes the water quality parameters collected as part of this sampling event.

TABLE 16 SUMMARY OF INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (25 AUGUST 2010)

Sample Location	Date	Sample Time	Number of Ponar Samples	Field Parameters	EA Split Sample Location
EIWSED07PW	25 August 2010	08:37 – 09:13	5	pH: 6.70 Temperature: 29.1°C ORP: -27.3 mV	----

TABLE 17 SUMMARY OF WATER QUALITY PARAMETERS FOR INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (25 AUGUST 2010)

Sample Location/ Time	Depth	Temperature (°C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
EIWSED07PW 09:23	6.7 ft	27.76	58,970	37.13	7.90	4.14	-182.7
	3.8 ft	27.78	59,000	37.14	7.87	4.07	-220.2
	1 ft	27.77	59,000	37.14	7.85	4.04	-198.7

From 0947 to 1249 hours, Benchmark extracted pore water from the EIWSED07PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed during this field effort. At 1203 hours, Benchmark encountered trouble with a centrifuge not being balanced. Benchmark rebalanced the centrifuge and resumed extraction of the pore water from the sediment at 1217 hours. At 1249 hours, Benchmark completed extraction and filtering of pore water from the EIWSED07PW sediment sample and transferred the water to one liter amber bottles for submittal to the analytical laboratory for analyses.

At 1312 hours, Benchmark loaded necessary field equipment and supplies onto their ATV in order to collect sediment from wetland sediment sample location EWSED08. At 1319 hours, Benchmark collected sediment sample EWSED08PW, which was to be used to extract and collect pore water from this sample location. The sediment sample was collected using field equipment and methodologies consistent with collection of other wetland sediment samples collected for pore water extraction. Parameters were also collected for the sediment sample, and the three buckets containing the sample were placed in an ice-chilled cooler. EA also noted that this sample contained a high clay content, which made it difficult for Benchmark to adequately homogenize. However, most of the material was used to extract pore water, and the pore water extracted from the sediment was homogenized following extraction. Table 18 provides a summary for the collection of the EWSED08PW sediment sample, including the field parameters collected and recorded for this sediment sample.

TABLE 18 SUMMARY OF WETLAND SEDIMENT SAMPLES COLLECTED FOR PORE WATER EXTRACTION (25 AUGUST 2010)

Sample Location	Date	Sample Time	Field Parameters
EWSED08PW	25 August 2010	13:19	pH: 5.41 Temperature: 32.2°C ORP: 140.2 mV

From 1334 to 1750 hours, with one exception, Benchmark extracted pore water from the EWSED08PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed during this field effort. At 1436 hours, Benchmark modified their methodology of extracting pore water after encountering problems with the recovered pore water being murky. Benchmark overcame this problem by taking the extracted pore water, homogenizing it, and then placing it in a clean centrifuge bottle so that it could be centrifuged further to allow for additional separation of suspended fines in the pore water sample prior to filtering. Benchmark also had to re-balance the centrifuge at 1602 hours. At 1750 hours, Benchmark filtered the pore water sample and placed the filtered pore water sample in a laboratory supplied five gallon container. At 1823 hours, Benchmark transferred the pore water sample to laboratory supplied sample bottles and placed the pore water sample in an ice-chilled cooler. At 1825 hours, the field crew left the site for the day.

26 August 2010

On 26 August 2010, EA arrived at the Site at 0745 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark extracting/collecting sediment pore water samples from wetland sediment sample locations. From 0745 to 0808 hours, Benchmark decontaminated field equipment, collected equipment rinsate blanks, and loaded necessary field equipment and supplies on the ATV in order to collect sediment from wetland sediment sample location EWSED02. At 0813 hours, Benchmark collected sediment sample EWSED02PW, which was to be used to extract and collect pore water from this sample location. The sediment sample was collected using field equipment and methodologies consistent with collection of other wetland sediment samples collected for pore water extraction. Parameters were also collected for the sediment sample, and the three buckets containing the sample were placed in an ice-chilled cooler. Table 19 provides a summary for the collection of the EWSED02PW sediment sample, including the field parameters collected and recorded for this sediment sample.

TABLE 19 SUMMARY OF WETLAND SEDIMENT SAMPLES COLLECTED FOR PORE WATER EXTRACTION (26 AUGUST 2010)

Sample Location	Date	Sample Time	Field Parameters
EWSED02PW	26 August 2010	08:13	pH: 6.89 Temperature: 27.5°C ORP: -273.8 mV
EWSED01PW	26 August 2010	11:58	pH: 6.59 Temperature: 29.3°C ORP: 88.4 mV

From 0836 1120 hours, Benchmark extracted pore water from the EWSED02PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed for EWSED08PW. At 1120 hours, Benchmark filtered the extracted pore water sample and placed the filtered pore water sample in a laboratory supplied five gallon container. At 1142 hours, Benchmark transferred the pore water sample to laboratory supplied sample bottles and placed the pore water sample in an ice-chilled cooler.

At 1158 hours, Benchmark collected sediment sample EWSED01PW, which was to be used to extract and collect pore water from this sample location. The sediment sample was collected using field equipment and methodologies consistent with collection of other wetland sediment samples collected for pore water extraction. Parameters were also collected for the sediment sample, and the three buckets containing the sample were placed in an ice-chilled cooler. Table 19 provides a summary for the collection of the EWSED01PW sediment sample, including the field parameters collected and recorded for this sediment sample.

From 1219 to 1744 hours, Benchmark extracted pore water from the EWSED01PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed for EWSED08PW. At 1737 hours, Benchmark also collected reconnaissance sediment samples from sediment sample locations EWSED04PW and EWSED07PW in order to do a test run on these samples to see if it is still possible to recover pore water from sediment located at these sampling locations. This is in response to sediment moisture loss due to the hot and dry weather conditions.

At 1800 hours, Benchmark filtered the extracted pore water sample for EWSED01PW and placed the filtered pore water sample in a laboratory supplied five gallon container. While filtering of this sample was being performed, Benchmark also centrifuged the reconnaissance sediment samples collected for EWSED04PW and EWSED07PW and was able to recover 40 ml and 45 ml of pore water, respectively, from these samples. Based on these results, Benchmark made a determination that extraction of the minimum volume of pore water required by the laboratory from these locations should be possible in 15 to 16 sets.

At 1825 hours, Benchmark transferred the EWSED01PW pore water sample to laboratory supplied sample bottles and placed the pore water sample in an ice-chilled cooler until shipping. At 1830 hours, the field crew left the site for the day.

27 August 2010

On 27 August 2010, EA arrived at the Site at 0748 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Brett Sutter, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark extracting/collecting sediment pore water samples from wetland sediment sample locations. The Benchmark crew was already decontaminating field equipment, collecting equipment rinsate blanks, and loading necessary field equipment and supplies on the ATV in order to collect sediment from wetland sediment sample location EWSED04. At 0805 hours, Benchmark collected sediment sample EWSED04PW, which was to be used to extract and collect pore water from this sample location. The sediment sample was collected using field equipment and methodologies consistent with collection of other wetland sediment samples collected for pore water extraction. Parameters were also collected for the sediment sample, and the four buckets containing the sample were placed in an ice-chilled cooler. Table 20 provides a summary for the collection of the EWSED04PW sediment sample, including the field parameters collected and recorded for this sediment sample.

TABLE 20 SUMMARY OF WETLAND SEDIMENT SAMPLES COLLECTED FOR PORE WATER EXTRACTION (27 AUGUST 2010)

Sample Location	Date	Sample Time	Field Parameters
EWSED04PW	27 August 2010	08:05	pH: 7.05 Temperature: 27.9°C ORP: 103.0 mV

From 0820 to 1440 hours, Benchmark extracted pore water from the EWSED04PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed for EWSED08PW. The centrifuge had to be re-balanced on several occasions as extraction of the pore water proceeded for this sample. At 1440 hours, Benchmark filtered the extracted pore water sample and placed the filtered pore water sample in a laboratory supplied five gallon container. At 1420 hours, Benchmark transferred the pore water sample to laboratory supplied sample bottles and placed the pore water sample in an ice-chilled cooler. At 1422 hours, Benchmark began packing coolers in preparation of shipment of the collected samples to the analytical laboratory. At 1433 hours, the field crew left the site for the day.

28 August 2010

On 28 August 2010, EA arrived at the Site at 0748 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. William Quast, Benchmark
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark extracting/collecting a sediment pore water samples from wetland sediment sample location EWSED07. When EA arrived on site, the Benchmark crew had already loaded necessary field equipment and supplies on the ATV in order to collect sediment from wetland sediment sample location EWSED07. At 0808 hours, Benchmark collected sediment sample EWSED07PW, which was to be used to extract and collect pore water from this sample location. The sediment sample was collected using field equipment and methodologies consistent with collection of other wetland sediment samples collected for pore water extraction. Parameters were also collected for the sediment sample, and the four buckets containing the sample were placed in an ice-chilled cooler. Table 21 provides a summary for the collection of the EWSED07PW sediment sample, including the field parameters collected and recorded for this sediment sample.

TABLE 21 SUMMARY OF WETLAND SEDIMENT SAMPLES COLLECTED FOR PORE WATER EXTRACTION (28 AUGUST 2010)

Sample Location	Date	Sample Time	Field Parameters
EWSED07PW	28 August 2010	08:08	pH: 6.96 Temperature: 20.9°C ORP: 257.7 mV

Around 0820 hours, Benchmark received notification from the laboratory that two of the pore water sample bottles shipped on the previous day arrived at the laboratory broken. These samples were associated with ICWWC sediment sample location EIWSED07. As such, plans were made to collect additional sediment and to extract and collect a pore water samples from this location on 30 August 2010.

From 0822 to 0830 hours, Benchmark decontaminated field equipment. From 0830 to 1452 hours, with one exception, Benchmark extracted pore water from the EWSED07PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed for EWSED08PW. The one exception noted was that Benchmark did not homogenize the sediment prior to transferring the material into the centrifuge bottles. One of the centrifuges had to be re-balanced on several occasions as extraction of the pore water proceeded for this sample. At 1455 hours, Benchmark began filtering the extracted pore water sample and placed the filtered pore water sample in a laboratory supplied five gallon container. At 1519 hours, Benchmark transferred the pore water sample to laboratory supplied sample bottles and placed the pore water sample in an ice-chilled cooler. The sample was to be held for shipment until Monday 30 August 2010. At 1530 hours, the field crew left the site for the day.

30 August 2010

On 30 August 2010, EA arrived at the Site at 0850 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Mr. Brett Sutter, Benchmark
- Ms. Kaitlin McCormick, EA, Environmental Scientist

The field activities for the day consisted of Benchmark extracting/collecting a sediment pore water sample from ICWWC sediment sample location EIWSED07, due to the bottles containing the original sample being broken during shipment. Benchmark also collected wetlands area surface water samples for laboratory analysis.

When EA arrived on site, the Benchmark crew was preparing for the collection of sediment from the EIWSED07 sample location. At 0916 Benchmark mobilized to surface water sample location EWSW01. At 0924 hours, Benchmark set sample tubing (Photo 19, Appendix A) and made a decision to come back to the site at a later time to allow the water turbidity to decrease prior to collecting the surface water sample at this location. From 0926 to 0934 hours, benchmark conducted a reconnaissance of the other surface water sample locations and made a determination that surface water samples EWSW04 could be sampled due to high tide conditions, and also noted that sediment sample location EWSED06 now contained water, and that pore water extraction and collection form this area was now possible.

At 0932 hours, Benchmark went back to field office and reviewed the map showing proposed surface water locations. They indicated that one additional surface water sample location might

also be favorable for sampling. At 0937 hours, Benchmark mobilized to surface water sample location EWSW-04 and placed sample tubing into surface water and then attached the other end to a wooden stake used to mark the sample location. They indicated the surface water sample would be collected once surface water turbidity had decreased from setting the sample tube. At 0941 hours, Benchmark mobilized to surface water sample EWSW03. This area was dry, and a surface water sample could not be collected from the area.

From 0944 to 0952 hours, Benchmark conducted a daily health and safety meeting, and departed for the sampling boat in order to collect sediment from ICWWC sediment sample location EIWSED07 for pore water extraction and collection. From 1008 to 1054 hours, Benchmark collected ICWWC sediment sample EIWSED07PW for pore water extraction/collection. Nine grab samples of sediment were collected and homogenized in a manner consistent with other ICWWC sediment samples collected on the previous days of this documented field effort. Benchmark also collected water quality from the EIWSED07PW sample location. Two buckets containing the collected sediment were placed in an ice-chilled cooler following collection. Table 22 summarizes sediment sample EIWSED07PW, which was collected from the ICWWC for pore water extraction and sampling, and Table 23 summarizes the water quality parameters collected as part of this sampling event.

TABLE 22 SUMMARY OF INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (30 AUGUST 2010)

Sample Location	Date	Sample Time	Number of Ponar Samples	Field Parameters	EA Split Sample Location
EIWSED07PW	30 August 2010	10:08 – 10:54	9	pH: 6.37 Temperature: 30.7°C ORP: 113.5 mV	----

TABLE 23 SUMMARY OF WATER QUALITY PARAMETERS FOR INTRACOASTAL WATERWAY SEDIMENT SAMPLES COLLECTED FOR EXTRACTION AND COLLECTION OF SEDIMENT PORE WATER (30 AUGUST 2010)

Sample Location/ Time	Depth	Temperature (°C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
EIWSED07PW 11:07	7.9 ft	29.57	59,360	36.00	6.59	7.71	-196.3
	3.5 ft	29.67	58,490	36.00	6.52	8.06	-199.1
	1 ft	29.74	59,350	35.95	6.52	8.01	-204.3

At 1130 hours, Benchmark arrived back at field office. At 1145 hours, two of the Benchmark crew collected an equipment rinsate blank in preparation for collection of surface water samples, while the third member homogenized the EIWSED09PW sediment sample.

At 1203 hours part of the Benchmark crew mobilized to surface water sample location EWSW01. From 1210 to 1242 hours, collection of surface water was initiated for the sample location. Photograph 20, Appendix A, illustrates surface water collection techniques utilized by Benchmark. Fifteen gallons of water, to be used for toxicity testing, was collected using a

peristaltic pump. This water was placed in three laboratory-supplied plastic buckets. At 1242 hours, Benchmark collected water quality parameters by filling a cup with water from the sample location, and then measuring the parameters. At 1252 hours, Benchmark filled other sample containers required for analysis of the surface water sample at this location. They also containerized a sufficient volume of surface water from this location for analysis of a MS/MSD, and field duplicate sample. At 1305 hours, Benchmark returned to their field office to retrieve an additional sample container required for the ESW01 surface water sample. They completed sample collection at this location at 1329 hours.

From 1333 to 1404 hours, Benchmark collected surface water sample EWSW04 using the same field equipment and methods as described for the collection of surface water sample EWSW01. Table 24 summarizes data associated with the collection of the surface water samples.

TABLE 24 SUMMARY OF WATER QUALITY PARAMETERS FOR WETLANDS SURFACE WATER SAMPLES (30 AUGUST 2010)

Sample Location/ Time	Date	Temperature (^{o}C)	Conductivity (µs/cm)	Salinity (ppt)	pH	Dissolved oxygen (mg/L)	ORP (mV)
ESW01 12:10 – 13:29	30 August 2010	35.37	77,380	43.20	5.86	3.78	-262.5
ESW04 13:33 – 14:04	30 August 2010	35.91	75,530	41.69	7.19	5.00	-280.6

From 1411 to 1557 hours, Benchmark extracted pore water from the EIWSED07PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed during this field effort. As with other centrifuge events, the centrifuge had to be occasionally re-balanced. At 1615 hours, Benchmark completed filtering of the extracted pore water and at 1622 hours, transferred the filtered pore water to appropriate sample containers. At 1630 hours, Benchmark began packaging samples for overnight shipment to the laboratory. EA left the site for the day at 1635 hours, while Benchmark continued to ready samples for shipment to laboratory.

31 August 2010

On 31 August 2010, EA arrived at the Site at 0745 hours. Participants included:

- Mr. Neil Henthorne, Benchmark
- Mr. Scott Beauchamp, Benchmark
- Ms. Kaitlin McCormick, EA Environmental Scientist

The field activities for the day consisted of Benchmark extracting/collecting a sediment pore water samples from wetland sediment sample location EWSED06. When EA arrived on site, the Benchmark crew was calibrating the YSI water quality meter and preparing for collection of sediment from wetland sediment sample location EWSED06. At 0837 hours, Benchmark collected sediment sample EWSED07PW, which was to be used to extract and collect pore water from this sample location. The sediment sample was collected using field equipment and methodologies consistent with collection of other wetland sediment samples collected for pore

water extraction. Due to standing water at the site, Benchmark drained this excess water from the sediment prior to placing it in the sample buckets. Parameters were also collected for the sediment sample and for water contained over the sediment, and the three buckets containing the sample were placed in an ice-chilled cooler. Table 25 provides a summary for the collection of the EWSED06PW sediment sample, including the field parameters collected and recorded for this sediment sample.

TABLE 25 SUMMARY OF WETLAND SEDIMENT SAMPLES COLLECTED FOR PORE WATER EXTRACTION (31 AUGUST 2010)

Sample Location	Date	Sample Time	Field Parameters
EWSED06PW	31 August 2010	08:37	*Soil* pH: 6.40 Temperature: 29.1°C ORP: 30.8 mV *Water* pH: 7.17 Temperature: 27.84 °C Conductivity: 51,660 µδ/cm Salinity: 31.93 ppt D.O.: 3.80 mg/L ORP: -52.4 mV

From 0906 to 1153 hours, Benchmark extracted pore water from the EWSED06PW sediment sample using equipment and methodologies consistent with those used during previous pore water extraction events observed for EWSED08PW. One of the centrifuges had to be re-balanced as extraction of the pore water proceeded for this sample. At 1207 hours, Benchmark began filtering the extracted pore water sample and placed the filtered pore water sample in a laboratory supplied five gallon container. At 1229 hours, Benchmark transferred the pore water sample to laboratory supplied sample bottles and placed the pore water sample in an ice-chilled cooler. Field work was completed for this sampling event, and at 1235 hours, Benchmark started packaging samples for shipment to laboratory. They were also planning on cleaning up and shipping other equipment in order to demobilize from the site. At 1237 hours, EA demobilized from the site, completing field oversight activities.

REFERENCES

Pastor, Behling & Wheeler, LLC (PBW). 2005. "Remedial Investigation and Feasibility Study (RI/FS) Work Plan for the Gulfco Marine Maintenance Superfund Site, Freeport, Texas." May.

PBW. 2006. "Sampling and Analysis Plan – Volume 1. Field Sampling Plan for the Gulfco Marine Maintenance Superfund Site, Freeport, Texas." May.

PBW. 2010. Memorandum to Mr. Gary Miller, U.S. Environmental Protection Agency (U.S. EPA): "Advance Notice of Baseline Ecological Risk Assessment Field Activities, Gulfco Marine Maintenance Site, Freeport, Texas." 11 August.

URS Corporation. 2010. "Final Baseline Ecological Risk Assessment Work Plan & Sampling and Analysis Plan for the Gulfco Marine Maintenance Superfund Site, Freeport, Texas." May.

APPENDIX A

Field Oversight Photographs

Appendix A

Photographs

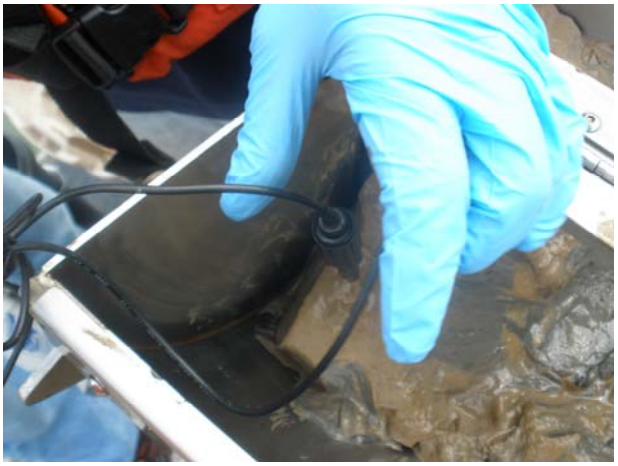
Photograph 1 Date: 13 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Wetlands sediment sample collection

Photograph 2 Date: 13 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Wetlands sediment sample homogenization

Photograph 3 Date: 13 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Representative view of wetlands sediment

Photograph 4 Date: 18 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: ICWWC sediment sample collection

Photograph 5 Date: 18 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Decanting of water using peristaltic pump



Photograph 6 Date: 18 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Collection of sediment parameters

Photograph 7 Date: 18 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: ICWWC sediment transfer to sample bucket

Photograph 8 Date: 18 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: ICWWC sediment sample homogenization

Photograph 9 Date: 18 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Water/sediment parameter instrumentation

Photograph 10 Date: 20 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Sediment transfer to centrifuge bottles

Photograph 11 Date: 20 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Sediment bottles loaded in centrifuge

Photograph 12 Date: 20 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Pore water separation following centrifuging

Photograph 13 Date: 27 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: ICWWC sediment transfer to sample bucket

Photograph 14 Date: 20 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Transfer of filtered pore water to sample bottles

Photograph 15 Date: 24 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Wetlands sediment tube for AVS/SEM analysis

Photograph 16 Date: 24 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Advancement of AVS/SEM sample tube

Photograph 17 Date: 24 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: AVS/SEM sample tube retrieval

Photograph 18 Date: 24 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: AVS/SEM sediment sample processing

Photograph 19 Date: 30 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Surface water sample tube placement

Photograph 20 Date: 30 August 2010
Site: Gulfco Marine Maintenance Superfund Site
Description: Collection of surface water samples

APPENDIX B

Field Oversight Notes

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FREEPORT, TEXAS
EPA T.O.# 0006-RICO-06JZ
EA PROJ.# 1434206

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Gulfco Marine 08/13/10

0750 Depart Houston for site

0915 Arrive on site

WEATHER: Sunny, hot and humid high of 96°F. Heat index 106°F. Chance of rain 20%. Raining at site upon arrival

PLAN FOR THE DAY: split sample locations as directed by EPA

Personel onsite: EA Duane Thomas
Besi (Benchmark): Ryan Zak
Brett Sutton
~~PBW~~ Neal Hunthorne
PT 08/13/10

- Further EA staff will be arriving around noon
- no PBW staff onsite as of yet

0930 Got status of sampling update from Neal Hunthorne (Benchmark). 3 samples on EPA split list have allready been collected EWSED02, EWSED05, EWSED06 were collected on 08/12/10. Samples were replaced with: EWSED03, EWSED04. EWSED02 was

Gulfco Marine 08/13/10

removed entirely from list.

0935 - Benchmark mobs to location: EWSED03
EA on phone confirming changes to sample list. Will begin oversight and split sampling on next location.

* Photo: Benchmark sampling set up

Samples are taken from ground with a stainless steel framel to a max depth of 6". Homogenized with a stainless steel plaster mixer attached to a drill. After samples are homogenized samples are spooned into jars. Field samples are initially collected and put into 3 gal buckets supplied by the lab.

1020 Mob to location EWSED03

* Photo: Sampling of location

1023 EWSED03 SAMPLE TIME

* Photo: Homogenization of EWSED03

1030-1042 Sample processing

1050 Mob to location EWSED04

* Photo EWSED04 SAMPLE LOCATION

1051 EWSED04 SAMPLE TIME

* Hitting reddish clay ≈ 1-2" bgs

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Gulfco, Marine 08/13/10

* Photo: 0-6" on trowell
1053 - 1120 Homogenizing & sampling of EWSED04
1123 Mob to location EWSED07
* Photo: Sampling of EWSED07
1125 SAMPLE TIME EWSED07
* photo 0-6" on trowell
1-2" sediment then red clay
- organic layer on top - (real dark black)
1128 - 1145 Homogenizing & sampling of EWSED07
* photo of site & Homogenizing
* photo of site
- site recently dried out
- dead fish

1202 Mob to NASO1
- Need to check ~~site~~ site w/ URS
- presence of shale over top of site.
- will check to see if shale can be brushed away
* Photo of site

1110
* H&O M. Chaney on site to EA

Gulfco, Marine 8/13/10

1205 - Mob to NASO5
* photo of site
- Did not sample site because equipment blank only done for metals

1213 - URS Personel on site
- David Lingle
- Margaret Roy

1224 - Discussion over NASO1 sampling
- Besi (Benchmark) concerned over shavings/shale on top of NASO1
- David Lingle & Margaret Roy both agreed that the best plan of action is to remove all large surface shale/shaving particles from the top of NASO1 & then sample the 6" sample

1226 - Mob to location NASO1
* photo of site

- Removal of scalings done using trowel & hands to brush surface & expose smaller particles. All large scalings removed prior to collection

Gulfco, Marine 8/13/10

* Photo of site NASO1
* Photo of removal of scalings
- Site sediments very hard packed
- large metal particles found at NASO1 removed from sample collection

1230 - started to rain @ NASO1

1232 - SAMPLE TIME @ NASO1

1227 - 1240 Sample collection + homogenizing @ NASO1

1237 - Duane voiced concern ove homogenization making sure to not just collect from top half for ~~quantities~~ analysis + testing w/ Margaret Roy 8/13 MKE

1238 - Organic /tree root piece removed from sample, glass & other debris also excluded from sample when noted.

1242: Two Samples collected from NASO1
- NASO1 8/13/10 1232
- NASO1 8/13/10 1232 Dup

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1250 - Left site for day
- discussed w/ Neil Hawthorne about sampling this weekend + he stated there would be no sampling until Monday (8/16/10)
- Stated there would be no further sampling on 8/13/10
- Neil Hawthorne gave tour of site to Margaret Roy + David Lingle

~~1300~~ 1300 - 1415 - Sample packaging & processing for shipping

1352 - Sample Chain of custody signed + sealed in cooler

1445 - Sample cooler dropped off at Fedex for saturday delivery.

END OF DAY
MKE

"Rite in the Rain"

Gulfco Marine 8/16/10

-1415 - Depart Hotel for site
1436 - Arrive @ site

WEATHER: Sunny, Hot & Humid. High of 94°F. Heat index of 100°F. Chance of Rain 40%. Raining upon arrival @ site.

PLAN FOR DAY: Collect some of the remaining sediment samples.

PERSONEL ON SITE: EA Michael Chanov
BESI (Benchmark) Neil Heathcote
Scott Beauchamp
Brett Sutter

1430 - 1520 Equipment Cleaning & Blanks prepared
- Trowel, plaster mixer & spoons scrubed w/ alconox & dI H_2O in a bucket & rinsed w/ DI H_2O.
* photo of site
1522 Mob to NASO2
- plants / vegetation removed from site to get to soil.
* photo of site NASO2 post removal

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1528 - SAMPLE TIME @ NASO2
* photo 0-6" on trowel
* photo of sample homogenation
* phot of site NASO2 post collection
NASO2 site sediment sand w/ some clay

1528 - 1551 Sample collection & homogenation

1554 - Mob to NASO3
* photo of site
- vegitation & plants removed from site to expose soil.
* photo of sample on trowel 0-6"
0-1" light brown sandy silt
1-4" Brown red sandy clay
4-6" light brown sandy clay w/ oxidized red patches

1600 - SAMPLE TIME @ NASO3
* photo post vegitation removal & during collection
Sample takin by inserting trowel to depth & working outward from center to get sample

"Rite in the Rain"

Gulfco Marine 8/16/10

1600-1612 - NAS03 collection & homogenization

1615 - Mob to NAS05
* photo of site

1618 - SAMPLE TIME @ NAS05
1/8" sand (light brown)
1/8-6" darker clay
* photo of 0-6" on trowel
* photo of collection @ site

1618-1632 NAS05 collection & homogenization

1630 - Soil sample inadvertently placed in unlabeled jar. Sample in wrong jar placed back at site NAS05 & the jar was thrown away.

1633 - Mob to NAS04
- Dried algae removed from top of site * photo
* photo of sample on trowell.
1/8" of light gray sand
1/8-3" light brown layer

Gulfco Marine 8/16/10

- Only could collect down to 3".
- Surrounding area around NAS04 had more cobble & stone than @ the site
* photo of site & surrounding area

1636-1650 NAS04 collection & homogenization

1654 - Mob to NAS06

1700 Sample Time for NAS06

1700-1711 NAS06 Collection & homogenization
- Fine white layer on top, followed by a dark brown clay layer 0-6"
* photo of site w/ vegitation
* photo of site post collection

1725 - Left site for the day
- collection to resume @ 0800 8/17/10

END OF DAY
MKC

"Rest in the Rain"

Gulfco Marine 8/17/10

0740 - Leave hotel for site

0800 - Arrive @ site

WEATHER: Sunny, hot & humid. High of 93°F. Heat index of 107°F. Chance of rain 50%

PERSONEL ON SITE: EA Michael Chanov
BESI (Benchmark) Neal Hinthorne
Scott Beauchamp
Brett Sutter

PLAN FOR DAY: Finish Sampling soil sites & background stations & move on to IWWC locations in afternoon

0805 - 0840 Equipment cleaning & blanks

0830 - Equipment Blank Time.

0845 - Mob to NAS07
* photo of site
* photo on trowell 0-6"
0-1.5": light brown layer of sandy clay
1.5"-6": dark brown layer of sandy clay

Gulfco Marine 8/17/10

- Vegitation removed from NAS07

0900 SAMPLE TIME @ NAS07

0845 - 0915 NAS07 collection Time & homogenation

0920 - Mob to NAS08

0931 - SAMPLE TIME @ NAS08

0930 - 0952 Sample NAS08 collection & homogenation
- Vegitation removed from site to expose soil
* photo of site before vegitation removing
* photo of site after vegitation removing
* photo of 0-6" on trowell @ NAS08
Sediment type consistant throughout
0-2" dark redish color
2"-6" lighter redish color to depth
* photo 0-6" on trowel

Sample did not mix well during homogenation
* photo of bucket & mixer

0956 Mob to NAS09

"Kite in the Rain"

Gulfco Marine 8/17/10

1002 - SAMPLE TIME @ NAS09

1002 - 1020 Sample collection & homogenation
- Vegitation removed from site
* photo of site.
* photo of vegitation removal process
* photo of 0-6" on trowell
* photo post collection
0 - 2.5" dark brown layer
2.5 - 6" Redish brown layer

1030 - Left site for sample processing & shipping, will reconvene for IWWE sample collection.

1530 - Return to site.

1530 - 1630 - Recon, determined where sites were, there accessability w/ the tidal influence.

1637 - Left site for day. Sampling to resume @ 0800, 8/18/10

END OF Day one

Gulfco Marine 8/18/10

0730 - Leave hotel for site

0750 - Arrive @ site

WEATHER - Sunny, hot & humed. High of 92°F. Heat index of 105°F. Chance of Rain 40%

PERSONEL ON SITE: EA Michael Chanov
Besi (Benchmark) Neil Hawthorne
Scott Beauchamp
Brett Suther

PLAN FOR DAY: Collect some of the FWWC sites for shipment in the morn & collect more sites in the afternoon. EPA split sample will be collected in the morning site: EIWSED07.

0800 - Mob to EIWSED03

0815 - Sample time @ EIWSED03
* photocollection apparatus
* photo of grab #1

"Rain in the Rain"

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- Grab #2 over top - disposed of off side in channel.
- Grab #3 - full to top * photo
- Grabs taken in 10ft radius around pole working out to in.
* photo in bucket
* Grab #4
- water removed from top of sample w/ peristaltic pump
* Excess sediment disposed of in bucket for Grabs: 1, 3, 4
- Sediment not taken from areas touching metal grab sampler

pH: 6.90
31.1°C -10.8mV

0.5" light brown silt/clay 0.5-6" dark bro...

0811 - 0859 Sample E1WSED03 collection & homogenation. - 3 grabs taken
- sample homogenated in same way as soil samples w/ a stainless steel plaster mixer attached to a drill.
* photo post homogination
* photo sample collection for analysis

Gulfco Marine 5/19/10

- Sampling equipment cleaned w/ DI + Decon soap. Soap rinsed off apparatus w/ DI over edge of boat.

0907 - Mob to E1WSED02

0910 - SAMPLE TIME E1WSED02
- water removed from grab sample w/ Peristaltic pump. * photo

Extra sediment dumped in channel near sink after collection

E1WSED02 - 0.5" light brown sandy, silty clay
0.5 - 6" dark brown/grey sandy

0910 - 0948 - E1WSED02 collection & homogenation
- split sample collected - (1) 8oz, (1) 4oz
- 3 grabs taken
* photo of E1WSED02 grab
* photo of E1WSED02 collection ingrab
- sediment not taken from areas touching sides of grab sampler.
* photo of grab w/ water over top

"Return the Rain"

Gulfco Marine 8/18/10

* photo of sampling procedure
- Sample placed in cooler w/ice after collection & during transport to dock

EIWSED02 sediment measurements * photo
pH: 6.8 Temp: 31.3°C millivolts: -4.5mV

* photo of homogenation
* photo post homogenation

0947-0956 Water quality taken at EIWSED03
- Total depth 2ft 9"

Depth	1ft 9"	1ft
Temp	30.8°C	30.16°C
Cond	43610ms/cm	43900ms/cm
Salinity	25.20ppt	25.19ppt
pH	8.09	8.03
DO	4.76mg/L	4.81mg/L
ORP	123.8	19.9

- only two measurements taken
* p

-0958 Mob to EIWSED02 Again
0959-1008 Water quality taken at EIWSED02
- Total depth: 4ft 6"

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Depth	3ft 6"	1ft
Temp	30.09°C	30.15°C
Cond	43660ms/cm	43680ms/cm
Salinity	25.24ppt	25.23ppt
pH	8.06	8.01
DO	4.35mg/L	4.29mg/L
ORP	74.9	53.6

* Only 2 measurements taken @ EIWSED02

* photo of EIWSED03
* photo of EIWSED02
- 1010 Back to dock to drop off samples + pick up supplies
1020 - Mob to EIWSED01
* photo of side EIWSED01
* photo of grab @ EIWSED01
1030 - SAMPLE TIME EIWSED01
1030-1132 EIWSED01 sample collection & homogenation
- There was alot of clay on left side of side
* photo of clay in grab sample

- Site water rinse between grabs
- Six grabs taken on left side of side
- Two grabs taken on right side of side
- right side had sandy silty clay similar to EIWSED02 + EIWSED03

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* photo of EIWSED01 grab #8
* photo of EIWSED01 in bucket

- EIWSED01 . 8 grabs taken
- EIWSED01 Sediment measurements

pH: 6.70 Temp: 31.4°C millivolts: 2.6 mv

1135-1139 - EIWSED01 WQ measurements

Total depth	6ft 9"	4ft	1ft
Depth			
Cond	43940 µs/cm	43940 µs/cm	43940 µs/cm
Salinity	25.4 ppt	25.42 ppt	25.41 ppt
Temp	30.11 °C	30.11 °C	30.11 °C
pH	7.99	7.98	7.97
DO	5.74 mg/L	5.39 mg/L	5.11 mg/L
ORP	41.0	33.7	29.6

1142 - Mob to EIWSED04
* photo of EIWSED04

1156 - Sample time EIWSED04
1156-1210 EIWSED04 collation & homogenation
- Water removed from top of grab w/ peristaltic pump
→ sample was a light brown & dark brown sandy silty clay

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- * photo of EIWSED04 in grab sampler
* photo of EIWSED04 in Bucket

EIWSED02 - Two grabs taken
- 1212 - Sediment measurements @ EIWSED04
pH: 6.86 Temp: 31.4°C millivolts: -6.5mv

1215 - Mob to EIWSED05
1223 - SAMPLE TIME @ EIWSED05
- Water removed from top of sample
1223-1245 EIWSED05 sample collation & homogenation
* photo EIWSED05 in grab sampler
* photo EIWSED05 during collation from grab

1248 - EIWSED05 sediment measurements
pH: 6.89 Temp: 31.5°C millivolts: -8.5mv

1250-1253 - WQ @ EIWSED05
- Total depth: ~~3.6ft~~ 3ft 6"

Depth	2ft 6"	1ft
Temp	30.4°C	30.62°C
Cond	40020 µs/cm	39960 µs/cm
Salinity	25.4 ppt	25.35 ppt
pH	7.96	7.97
DO	5.9 mg/L	5.15 mg/L
ORP	N/A	7.9

- only two measurement depths taken

"Rite in the Rain"

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1255 - Mob back to EIWSED04

1255 - 1303 - WQ @ EIWSED04

Total depth ~~2ft 6 ft~~ 2ft 8"

Depth	1ft 4"
Cond	~~34180 µS/cm~~
Salinity	25.4 ppt
pH	7.95
DO	4.70 mg/L
ORP	0.7
Temp	30.47°C

- only one measurement taken

1305 - Back to dock to drop off samples

1330 - Break for lunch

1410 - Back from lunch

1410 - 1430 - prep boat for sampling trip

1430 - Mob to EIWSED06

* photo of EIWSED06

1437 - SAMPLE TIME EIWSED06

- Sample is a sandy, silty, clay
- water removed from top of grab prior to collection

* photo of grab @ EIWSED06

Gulfco Marine 8/18/10

1452 - left EIWSED06 to allow water to settle after being disturbed by boat.

1503 - Back to EIWSED06

- Two grabs attempted w/ no success

- Grabs @ EIWSED06 in sample (2)
- Large shells removed by hand from EIWSED06

- 1437 - 1515 Sample collection thermographs @ EIWSED06

1517 - Sediment measurements @ EIWSED06

pH: 7.04 Temp: 31.9°C millivolts: -14.3 mv

1520 - 1527 - WQ @ EIWSED06

Total depth: 4ft 6"

Depth	3ft 6"	1ft
Temp	31.59°C	31.51°C
Cond	42950 µS/cm	38610 µS/cm
Salinity	24.0 ppt	24.1 ppt
DO	7.23 mg/L	6.6 mg/L
pH	7.47	8.01
ORP	-22.4	-16.3

- Two depths @ which measurements taken

"Ritz in the Rain"

Gulfco Marine 8/18/10

1530 - Into shore to get pvc cuplinks

1545 - Mob to EIWSED07

1600 - SAMPLE TIME EIWSED07

1600 - 1630 - EIWSED07 collection + homogenation

* photo of EIWSED07

* photo of WQ meter setup

- EIWSED07 - two grabs taken
  - sediment sandy, silty, clay

* photo of water removal of EIWSED07

* photo of EIWSED07 in grab sampler

1633 - EIWSED07 sediment measurements

pH: 6.82 Temp: 31.8°C millivolts: -4.3mv

- EIWSED07 WQ taken 1636 - 1639

	6ft 3"	3ft	1ft
depth			
Cond	42840 µs/cm	42770 µs/cm	42690 µs/cm
Salinity	23.95 ppt	23.92 ppt	23.88 ppt
Temp	31.62°C	31.63°C	31.63°C
pH	8.07	8.06	8.04
DO	6.45 mg/L	6.94 mg/L	6.86 mg/L
ORP	-14.5	-21.8	-21.4
	Total depth	7ft 3"	

- (3) measurement depths taken

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1640 - Back to dock for day

- All ECWW sites marked w/ 10ft sections of pvc Piping.

- Sediment measurements conducted on last grab sample of each site.

- sediment measurements conducted in grab sampler after all sediment was collected in bucket from undisturbed section.

- 1700 - LEFT SITE FOR DAY

- 1730 - 1600 - sample packaging & processing for shipping

1800 - Chain of custody signed & sealed in cooler

1816 - Sample cooler dropped off @ Fed ex for overnight shipping

END OF DAY mc

"Keep in the Rain"

Gulfco Marine 8/19/10

- No sampling to occur
- 0940 - Recon of wetland sites postponed until 1300 today.

WEATHER: Rainy, hot, humid. High of 91°F. Heat index of 100°F. Chance of Rain 60 %. Rainy upon arrival on site.

PERSONEL ON SITE - EA - Michael Chavez
- BESI - Neil Hawthorne
- Brett Sutter
- Scott Beauchamp

-1420 - 1453 - Recon of Wetland sites
EWSED03 - (2)
EWSED06 - (2)
EWSW04 - Small amount of water overlying
EWSW01 - (1) - overlying water
EWSED02 - (1)
EWSED01 - (1)
EWSED09 - (2)
EWSED08 - (1)
EWSED04 - (2)
EWSED07 - (2)
EWSED05 - (2)
~~EWSED (1)~~ mc

Gulfco Marine 8/19/10

-(1) wet all the way to surface w/ some overlaying water

(2) - Moist all the way from surface to below 6"

(3) - Dry somewhere between 0-6"

- 1520 - Left site for day. Rainy unable to collect first pore water sample.

SAMPLING TO RESUME @ 0730 8/20/10.

END OF DAY
MKC

"Rite in the Rain"

Gulfco Marine 8/20/10

- 0710 - Left Hotel for site
- 0730 - Arrive @ site

WEATHER: Sunny, Hot & Humid. High of 93°F. Heat index of 105-110°F. Chance of Rain 30%.

PERSONEL ONSITE: EA - Michael Chanov
BESI - Neil Hawthorne
Brett Sutter
Scott Beauchamp

PLAN FOR DAY: Collect some of the ICWW Pore water sites & spin down for pore water sampling.

- 0800 MOB to ELWSED 01 PW

0820 SAMPLE TIME ELWSED01PW

0820 - 0850 - Sample ELWSED01 Collection w/
No homogenation
- water removed from top of sample prior to collection

FIELD BOOK

#101595

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0855- Sediment measurements EIWSED01PW
pH: 7.21 Temp: 30.2 millivolts: -28.2
- Two grabs taken from left of site
  - very large amount of clay
- Two grabs taken from right of site
  - much larger portion of fine silt.

0900-0910 EIWSED01PW · WQ Taken
- Total depth: 7.0 ft

Depth	0 ft	3 ft	1 ft	
Temp	28.8 °C	28.8°C	28.81 °C	1st measurements
Cond	46710 ms/cm	46710 ms/cm	46680 ms/cm	taken w/
Salinity	27.99 ppt	27.94 ppt	27.94 ppt	cap on redone
pH	7.76	7.76	7.76	← @ R
DO	4.79	4.82	4.62	
ORP	-34.5	-49.4	-56.1	

- Two five gallon buckets (3/4 full) collected @ each site
- Grab sample collected in same way as previous ICWW site collections on 8/18/10.
- Sediment touching side of grab sample excluded from sample.

0915- Mob to EISED02PW
0925- SAMPLE TIME EISED02PW
0925-0945 - EIWSED02PW collection

Gulfco Marine 8/20/10

947 - Sediment measurements taken
pH: 7.01 TEMP: 30.2°C millivolts: -16.5

0948 · EIWSED02PW WQ Taken
Total depth: 4.6 ft

Depth	3.6 ft	1 ft
Temp	28.89 °C	28.87°C
Cond	46720 ms/cm	46700 ms/cm
Salinity	27.92 ppt	27.90 ppt
pH	7.76	7.76
DO	5.24	5.03
ORP	-87.5	-90.0

0956 - Mob to EIWSED03PW
1010 - SAMPLE TIME EIWSED03PW
1010-1040 EIWSED03PW Collection
1024 - left EIWSED03PW to allow stirred sediment to settle
1030 - Mob back to EIWSED03PW
1038 - Sediment measurements EIWSED03PW
pH: 7.07 Temp: 30.3°C millivolts: -21.2

Four grabs collected at site.
- First two less than 6"
- Last two greater than 6"

Gulfco Marine 8/20/10

1040 - ElwSED03PW WQ Taken

Total depth 3ft

Depth	1.5ft
Temp	29.18°C
Cond	43240 ms/cm
Salinity	27.76ppt
pH	7.74
DO	5.50mg/L
ORP	6.6

1049 - In to dock to drop of samples & start pore water extraction

-1104- Arrive @ dock.
- Samples placed in coolers w/ ice

1113 - ElwSED01PW Homogenized
- mixed w/ plastic mixer (stainless steel) as previously described during this sampling effort

1117 - Using a stainless steel spoon sample placed in 750ml, new nalgene containers.

Gulfco Marine 8/20/10

1130 - 12 bottle loaded & placed in three centerafuges
- Samples spun @ ~3500 rpm for 15 min
* photo extraction from nalgene post spin
* photo pore water sampling materials
1) 750 ml plastic bottle
2) stainless steel spoon
3) 60ml monoject sterile syringe
4) 0.45um Filter column

1143 - 1358 - Porewater removed w/ syringe + filtered
After pore water extraction bottles were scoop clean w/ a stainless steel spoon & refilled w/ same site sediment
Bottles not rinsed between centerafuge runs
* photo pre centerafuge ElwSED01PW
* photo post centerafuge ElwSE01PW
1200 - 1380 - Continuous process until volume reached
- Excess overlaying water post centerafuge dumped into next round of bottles for the same sample
* photo of bottle cleaning
* photo of clean bottle

- EE syringe ~~mist~~ type ElwSED01PW - Tip of syringe bit sediment, syringe disposed off.

1300 - 2nd bucket ElwSED01PW Homogenized

Gulfco Marine 8/20/10

1400 - EIWSED01PW - pore water collected combined into one sample container & homogenized before being placed into sample containers
- combined container was a 20L cubicontainer
- SAMPLE TIME EIWSED01PW = collected time

1419 - Break for lunch

1510 - Return from lunch

1510 - 1530 - Sampling apparatus (Mixer + spoons) washed w/ soap + water + rinsed w/ DI

1531 - EIWSED02PW homogenized

1531 - 1550 - EIWSED02PW loaded into 12 new bottles for centerafuge

1614 - 1749 Pore water removal from bottle w/ syringe + put in combined container thru filter. (EIWSED01PW)
- Excess sediment placed in seperate bucket from EIWSED01 for placement back @ site tomorrow 8/21/10

Gulfco Marine 8/20/10

- Containers for EIWSED02PW cleaned the same way as EIWSED01PW, between centerafuge runs - 1628 - 1710

1631 - EIWSED02PW - Syringe drew sediment into it attempted to be filtered + then when unsuccessful disposed of.

1633 - Mixer decon & EIWSED02PW bucket #2 Homogenized

- New filter installed every 60ml

1640 - Run #2 started
EIWSED01 +02
- Bottles post centerafuge cleaned into buckets for placement back @ site on 8/21/10

- 1714 - EIWSED03PW Bucket #1 homogenized w/ decon plastic mixer

1719 - EIWSED03PW loaded into bottles for Run #1

Gulfco Marine 8/20/10

1737 - E1WSED03PW Run#1 started

1753 - E1WSED02PW transfered into sample containers (poured from cubicontainer)
- E1WSED02PW sample time = collected time
- Cubicontainer placed in trash after emptied into sample containers

1758 - E1WSED03PW - pore water removal started w/ syringe

1828 - Run#2 started

1846 - E1WSED03PW Bucket # 2 Homogenized w/ decon. mixer

1932 - E1WSED03PW Run #3 started

2018 - E1WSED03 PW - 3L Analysis
3L - MS/MSD
- Pore water removal complete

2020 - E1WSED03 - Transfered from combined cubicontainer into sample analysis jars

Gulfco Marine 8/20/10

2026 - All pore water sample bagged & placed in cooler w/ ice

2030 - Sampling complete for day

2035 - Left site for day
- Sampling to resume @ 0730 8/21/10

END OF DAY
MKL

Gulfco Marine 8/21/10

0700 - Left hotel for site

0720 - Arrive @ site

0720 - 0815 Prep boat for departure

WEATER: Sunny, hot + humid. High of 98 °F. Heat index of 110 °F. Chance of Rain 20 %.

PLAN FOR DAY: Collect & process two ICWW sites for pore water.

Personnel onsite: EA: Michael Chavez
Besi: Neal Hershberger
Scott Beauchamp
Brett Sitter

0830 - EIWSED01-03 post centrifuge sediment dumped

0835 - Mob to EIWSED05pw (5 sites)

0840 SAMPLE TIME EIWSED05pw
- water removed from top of grab
- 4 grabs taken

0840 - 0910 - EIWSED05pw collection

0911 Sediment quality EIWSED05pw
pH: 6.25 Temp: 29.8°C millivolts: 28.4

Gulfco Marine 8/21/10

0912: Mob to EIWSED04pw

0920 SAMPLE TIME EIWSED04pw

0920 - 0946 - EIWSED04pw collection

0950 - Sediment quality EIWSED04pw
pH: 6.37 Temp: 29.5°C millivolts: 19.4

- 0948 WQ EIWSED05pw
Total depth: 4 ft

Depth	3 ft	1 ft
Temp	28.27 °C	28.24°C
Cond	43820 ms/cm	43810 ms/cm
Salinity	28.17 ppt	28.16 ppt
pH	7.95	7.94
DO	5.08 mg/L	4.74 mg/L
ORP	35.4	14.3

0953 - WQ EIWSED04pw
Total depth: 3.8 ft

Depth	2.8 ft	1 Ft
Temp	28.20°C	28.25°C
Cond	46520 ms/cm	46570 ms/cm
Salinity	28.18 ppt	28.18 ppt
DO	4.05 mg/L	4.19 mg/L
pH	7.94	7.94
ORP	1.4	-2.9

Gulfco Marine 8/21/10

1000 - In to shore for processing

1014 - Arrive @ dock
- ~~EIWSED05PW~~ EIWSED04PW placed in cooler w/ ice

1018 - EIWSED05PW - homogenized w/ decon plaster mixer.

1023 - EIWSED05PW - placed in 12 new pre cleaned sample bottles for centrifuging

1039 - EIWSED05PW Run #1 started

1058 - EIWSED05PW pore water removal from bottles started

1109 - EIWSED05PW - cleaned centrifuge bottles between runs w/ metal spoon
* photo of filtering into cubicontainer

1129 - EIWSED05PW run # 2 started
* photo of reloading bottles

- Left over pore water from previous runs dumped into next round of centrifuging.

Gulfco Marine 8/21/10

1145 - EIWSED06PW - Bucket #2 Homogenized
* photo pore water extraction

1312 - EIWSED05PW collection complete
- poured into sample jars
- 4 jars sample
- 4 jars duplicate
* photo pouring into jars

1330 Break for lunch

1430 Return from lunch

1432 - 1435 - Decon mixer + spoons

1436 - EIWSED04PW Bucket # 1 homogenized

1439 - EIWSED04PW - loaded into 12 new, clean sample bottles (plastic)

1462 - EIWSED04PW Run #1 started

1515 - Pore water EIWSED04PW extraction w/ syringe started.

Gulfco Marine 8/21/10

1520 - Syringe that touched sediment disposed of.

1544 - EIWSED04PW Run #2 started

1552 - EIWSED04PW Bucket #2 homogenized

1642 - EIWSED04PW collection complete

1646 - EIWSED04PW composite transferred into sample jars

1703 - Left site for day

END OF DAY

MRC

Gulfco Marine 8/22/10

0700 - Left hotel for site

0720 - Arrive @ site

0720 - Prep boat for collection

WEATHER: Sunny, hot & humid. High of 99°F. Heat index of ~~100~~ 110°F. Chance of rain 20%.

Personnel on site: ~~EA~~ Michael Chanov
Besi - Neil Hawthorne
Brett Sutter
Scott Beauchamp

Plan for day: Collect one ICWW site & process due to filter constraints until Monday (8/23/10).

~~EIWSED04PW 05 PW dumped in slip where collected. (Post centrifuged) sediments)~~ ← decided to do @ another time due to fishing activity.

0810 - Mob to EIWSED06PW

0825 - SAMPLE TIME EIWSED06PW

Gulfco Marine 8/22/10

0918 - Sediment measurements ElWSED06PW
Temp: 29.5°C pH: 6.77 Millivolts: -1.3

0913 - WQ @ ElWSED06 PW
Total depth: 5.9 ft

Depth	4.9ft	3 ft	1ft
Temp	28.11°C	28.11°C	28.11°C
Cond	43570 ms/cm	43570 ms/cm	43570 ms/cm
Salinity	27.99 ppt	28.00 ppt	27.99 ppt
pH	8.09	8.15	8.16
DO	4.87 mg/L	4.73 mg/L	4.52 mg/L
ORP	47.7	33.1	30.4

0825 - 0917 ElWSED06PW Collection

0922 - Into shore

0932 - Arrive @ dock

0940 - ElWSED06PW Bucket #1 Homogenized

0942: ElWSED06PW loaded into 12 clean sample bottles (plastic) for centrifuging.

0959 - ElWSED06PW Run #1 started

Gulfco Marine 8/22/10

1020 - Sample ElWSED06PW pore water removal w/ syringe started

1025 - ElWSED06PW Run #1 bottle cleaning started (scooped out w/ stainless steel knife & spoon)
- Excess pore water not siphoned out + poured into next round of centrifuging
* photo of cubicontainer

1043 - Run #2 started

1058 - ElWSED06PW Bucket #2 Homogenized

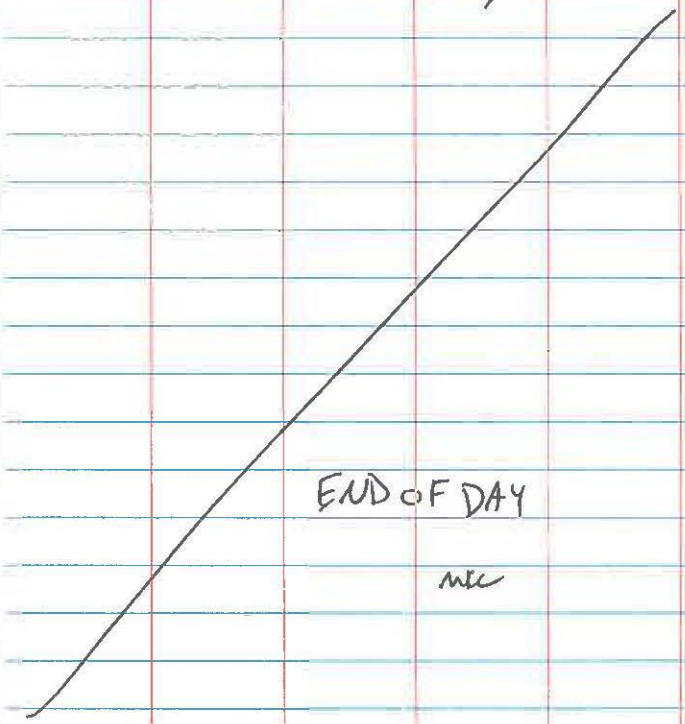
1107 - Extra pore water pulled from bottles w/ less than 60ml (2 10ml) was not filtered into cubicontainer until next run was done in centrifuge (2 10ml) placed in glove to protect tip & set on table.
* photo of syringe
* photo of weighing of bottles prior to placement in centrifuge for balancing

Gulfco Marine 8/22/10

1151 - ELWSED06PW removal w/ syringe complete

1154 - ELWSED06PW composite homogenized & poured into sample containers, amber glass jars for analysis

1215 - Left site for day



END OF DAY

MLC

Gulfco Marine 8/23/10

WEATHER: Sunny, hot, humid. High of 100°F. Heat index of 110°F. Chance of Rain 20%.

PLAN FOR DAY: ReCollect reference sediment sites & one marsh site for pore water extraction

Personnel on site: EA - Michael Chanov
- Kaitlin McCormack
Besi - Neil Hawthorne
- Brett Suttle

0800 - Left hotel for site

0820 - Arrive @ Site

0820 - 0900 - Prep for sampling

0900 - Mob to NAS07

0908 - SAMPLE TIME NAS07

0908 - 0912 - NAS07 collection & homogenation

Gulfco Marine 8/23/10

→ NAS07 collected into 5 gal bucket w/ 6" trowel & mixed w/ trowel before being placed in sample jars

0915 NAS07 Extra sediment dumped back @ site

0916 - Mob to NAS08

0917 - Sample time at NAS08

vegetation removed from around site prior to collection

0917 - 0921
Sample collection and homoginization

Sample collected into new 5 gallon bucket same as NAS07

0921 - NAS08 - extra sediment dumped back at site.

Gulfco Marine 8/23/10

0922 - Mob to NAS09

0923 - Sample time at NAS09
veg. removed from around site prior to collection

0923 - 0927
Sample collection and homogenization

Sample collected into new 5 gallon bucket same as NAS07 and NAS08

Sample scooped into sample jars with clean, decon'd spoon
New spoon used for each sample

0927 - NAS09 extra sediment dumped back at site

0928 - mob to EWSED01 - PW

0933 + arrive at ~~EWSED01~~ EWSED01 - PW

Gulfco Marine 8/23/10 EWSED01-PW

0933-0944 sample collection

vegetation cleared prior to sample collection

Sample collected w/ cleaned deconed shovel into new 5 gallon bucket

visible fiddler crabs removed from sample

top 6" of soil sampled

water depth just below 6" in sample hole

Photo of sample collection

Photo 0-6" on shovel

0944 back to house for processing.

0953 arrived back at house Samples were placed in a cooler with ice upon arrival

Gulfco Marine 8/23/10

0955 samples scooped into new bottles with clean, decon-ed spoons

bottles are plastic

photo of sample scooping photo # 100-6058, 91

Run 1 started at 1013

Centrifuge around 3500 rpm run for 15 minutes

Extraction begins 1036

Sample cloudy - centrifugation for an additional 15 minutes

Extraction begins - test extraction due to filter constraints* - no filters until Tuesday 8/23

1132 mob to EWSED03-PW

1137 - arrive at EWSED03-PW

1141 Gulfco Marine 8/23/10

1138-1141 Collected 2 centrifuge bottles of soil. Homogenized in clean 5 gallon bucket w/ clean decon-ed trowel.

2 photos- one of sample location.
one of sample transfer to jar

1141 add'l material dropped at site location

1142 mob to EWSED06-PW

1143 collect 2 centrifuge jars from EWSED06-PW

vegetation removed from site before sample collection

decon procedures not followed as bucket and trowel will be disposed of post reconaissance sampling

1145 sample homogenization w/ trowel in 5 gallon bucket

Gulfco Marine 8/23/10

1145-1148 samples transferred to jar.

1148 remaining sample discarded at sample location

1149 mob to EWSED07-PW

1157 arrive at EWSED07-PW

1152-1153 Sample collection of material for 2 centrifuge bottles

1153-1157 Sample homogenized in a 5 gallon bucket w/ trowel and transfered to centrifuge bottles (2)

photo of sample location

1157 remaining sample disposed of at sample location

1158 - mob to EWSED04-PW

Gulfco Marine 8/23/10

1159 Sample collected at EWSED04-PW

photo of Sample collection at EWSED04-PW

1200 Sample homogenized and transferred to 2 centrifuge bottles.

1205 remaing sample dropped at sample loc

1207 mob to EWSED09-PW

1210 arrive at EWSED09-PW and collect Sample for 2 centrifuge jars

1211-1214 homogenize sample and scoop into sample jars

photo of Sample loc EWSED09-PW

Gulfco Marine 8/23/10

1214 remaining sample disposed of at sample point

1215 mob to EWSED05-PW

217 arrive at EWSED05-PW and collect sample

photo of site

1218 homogenize Sample from EWSED05-PW

1219 sample transferred to two centrifuge bottles

12-21 remaining Sample disposed of onsite

1222 mob to lab for analysis

1231 EWSED04-PW
EWSED05-PW

put in centrifuge for 30 minutes at ~3500 rpm

Gulfco Marine 8/23/10

1237 EWSED03-PW
EWSED09-PW

put into centrifuge for 30 mins at ~3500 rpm

1242 EWSED06-PW
EWSED07-PW

put into centrifuge for 30 mins at ~3500 rpm

1245 break for lunch

~~0923~~ return at 1430 after picking up ice

1430 - no water in EWSED09-PW
EWSED05-PW
EWSED03-PW
EWSED06-PW

water - some in
EWSED04-PW
EWSED07-PW

Gulfco Marine 8/23/10

EWSED04B-PW - ~20mL
got 16mL -
hard to get rest

EWSED04A-PW looks like the same amount of water as EWSED04B-PW

re-centrifuging EWSED04+PW for 30 minutes

EWSED07~~A~~B-PW - ~25mL
filter not usable after 5mL

EWSED07A-PW - ~30mL
very cloudy H_2O sample

1450 re-centrifuging both EWSED07-PW and EWSED04-PW

1525 checked recovery on centrifuged samples

EWSED04B-PW -
~40mL of recovery

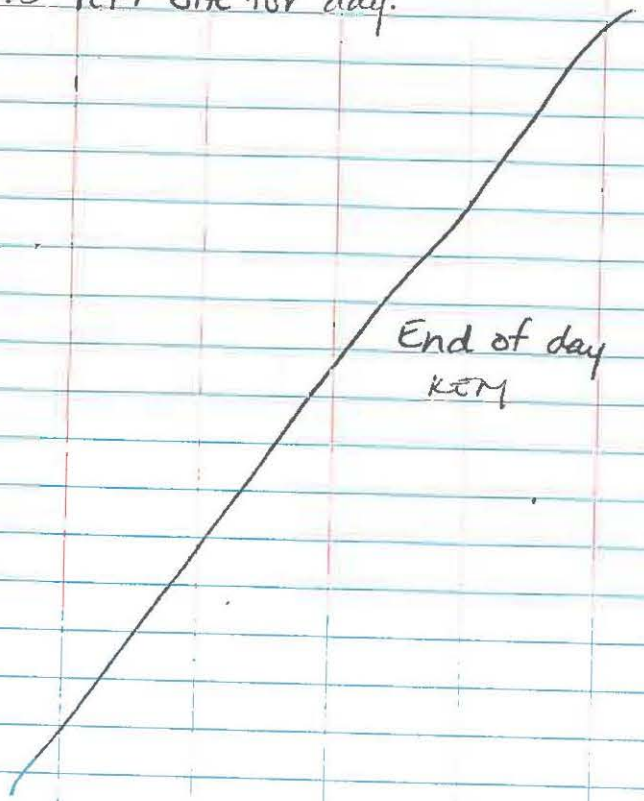
1545 decision made to collect

Gulfco Marine 8/23/10

AVS Samples after shipping coolers

1630 filters not arriving until Wednesday. Decision made to complete AVS sampling Tuesday 8/24.

1645 left site for day.



Gulfco Marine KM 8/24/10

8/24/10

0730 depart hotel

0800 arrive onsite - crew here is cutting tubing for ~~decon~~ KM AVS samples and is about to start decon of equipment for use today.

0802 decon to start - crew first washes tubes with soap and water, then rinsed with DI water and placed in clean, new ziploc bags.

WEATHER: Sunny, hot, humid. High of 100°F. Heat Index of 110°F. Thunderstorms last night.

PLAN FOR DAY: Collect AVS samples

Personnel on site: EA - Kaitlin McCormick
BESI - Neil Henthorne
Brett ~~Sutter~~ KM Soutar
Scott Beauchamp

0830 ATV loaded with sample supplies.

Gulfco Marine 08/24/10

0835 Collected equipment blank by running DI water through tubing

seperate crew members cleaned trowels and shovel with soap and water.

0845 resume loading supplies and field prep

850 mob to EWSED04 and EWSED07

0855
~~0857~~ arrive at EWSED04

0855 begin collecting sample

photos of sampling method Total of 4 photos.

1st attempt - placed capped 6" piece of plastic core liner on ground, used wooden board over cap and hammered board to drive core liner. A ~~knife~~ hole

Gulfco Marine 8/24/10

made in cap to allow air to escape.

2nd attempt made with same method with new liner and cap.

Core removed by digging out soil around core and pulling out core, as shown in photos. digging done with washed, but not decon'ed trowel, since trowel did not touch sample.

0903 sample collection complete at EWSED04

one member of crew to push up sample at house with extruder, cut remaining liner off to ensure no headspace and then cap and seal
return to sample point.

0906 crew measured temp, pH, mV of soil.
photo taken.

Gulfco Marine 8/24/10

0910 Measurements: 30.8 °C temp
6.65 pH
did not catch mV reading - it was taken.

0911 - measurement probes washed in soap and water.

0913 - mob to house

915 - arrive at house for core processing

09-17 used nitrile glove over end of extruder to condense sample
2 photos taken

rinsed outside of core liner with DI water. Wiped remaing mud off outside of liner.

0919 cut off portion of empty core with core cutter.
2 photos taken

Gulfco Marine 8/24/10

removed extra liner and capped core with a new, clean cap. Core labelled with sample ID and duct taped caps to liner.

AVS sample stated to require no headspace.

Sample labelled and given time of 0855, when sample collection commenced.

0926 - depart house for EWSED07
0929 - arrive at EWSED07

0930 - sample collection begins.
note: used keys at both this sample and last to puncture cap.
2 photos taken
Sample collected same as 2nd attempt at EWSED04

2 add'l photo taken
+ 1 photo of collected core

Gulfco Marine 8/24/10

0936 take Soil readings

pH 6.80
Temp 31.3 °C
orp 216.2 mV

0939 wash Soil probes in soap and H_2O

0942 mob to EWSED03
0943 arrive at EWSED03

0944 collected sample following same methods as previous location
one photo taken

Soil appears much drier at this location

decision made to record Temp only because of concern that probes may break.

Second photo taken.

0949 take Soil readings
32.6 °C

Gulfco Marine 8/24/10

Sample at EWSED03 bulged cap out - thought to have no air in headspace.

0952 mob to EWSED06
0953 Sample collection begins at EWSED06 - using same method as previous samples.
2 photos taken

0957 - clean trowel

0959 - Soil 174.1 mV orp
readings 31.7 °C - Temp
7.19 pH

1000 clean probes

1002 mob to EWSED02
1004 arrive at EWSED02

1005 Sample collection begins.
Same procedure as previous sites
photo taken x2

Gulfco Marine 8/24/10

1012 Soil readings taken
orp 10.2 mV
pH 6.43
Temp 31.4 °C
1018 wash soil probes and trowel
1020 mob to EWSED01

1021 arrive at EWSED01

1023 begin sample collection at EWSED01
Vegetation cleared before collection.
Same method as previous
Sample.
Photo taken

1024 Sample readings taken
orp -18.0 mV
Temp 30.6 °C
pH 6.85 pH

1026 Soil probes washed

1030 mob to EWSED09
1031 arrive at EWSED09

only taking temp at this loc
b/c of dry soil.

Gulfco Marine 8/24/10

1032 Sample collection begins -
Same method as previous
photo taken - x2

1034 37.3°C temp Sample of
6.98 pH Soil readings
80.5 mV orp
1036 wash soil probes

1040 mob to EWSED08

1041 arrive at EWSED08

1042 begin sample collection
photo taken
Same procedure as previous
Sample. Sample bagged but not
2nd photo Capped in field.
taken
1045 soil readings taken
to 31.7 °C
1050 10.6 orp (mV)
6.95 pH
1051 wash probes in soapy water
1052 mob to EWSED05

Gulfco Marine 8/24/10

1053 arrive at EWSED05

1054 begin Sample collection
Same method as previous
Sample., S
5 photos taken + 1 of final core

1054 Soil reading:
to orp 63.4 mV - orp
1058 6.23 pH
37.8 °C - Temp

probe broken - plastic guard
only - actual probe intact

1100 probes washed

1103 mob to house for processing

1105 arrive at house.

1110 Sample processing begins
Cores extruded, to eliminate head
space, capped, taped, and
labelled
extrusion done using same

Gulfco Marine 8/24/10

method as previously done for
EWSED04, same capping method
used.
photo taken

1st core done processing - EWSED05 at
1116 - top and bottom of core
labelled.
2nd Core Started - EWSED02 at
1117, finished 1126
photo taken. (#100-6097)

3rd Core Started - EWSED01 at 1127,
finished at 1134
photo taken (#100-6098)
4th Core started - EWSED08 at 1135
finished at 1141

5th core started at 1141 ~~1150~~ KM
EWSED09, finished at - 1150

10th one started at 1150 - ~~1155~~ KM
EWSED06, finished at 1155
no need to extrude or
cut this core, was not done

Gulfco Marine 8/24/10

1155 begin processing EIWSED03 did not need to extrude or cut this sample

1159 finished processing EIWSED03

1200 begin processing EIWSED07 did not need to extrude or cut this sample.

1205 finished processing EIWSED07

1210 Break for lunch

1330 return from lunch team to prepare sediment left from pore water extraction for return to the sample locations.

Centrifuge bottles opened and sediment placed in a seperate 5 gallon bucket for each sample station.

1420 completed emptying centrifuge jars

1420 loaded boat to return sediment to sample locations

1430 depart on boat for site EIWSED02-PW

1439 arrive at EIWSED02-PW Sediment emptied back at site

1441 mob to EIWSED03-PW

1442 arrive at EIWSED03-PW and begin emptying buckets

1444 mob to EIWSED01-PW

1445 place sediment at site

1446 mob to EIWSED04-PW and EIWSED05-PW

1448 arrive at EIWSED04-PW and EIWSED05-PW sediment placed back at sites.

1453 mob to EIWSED06-PW

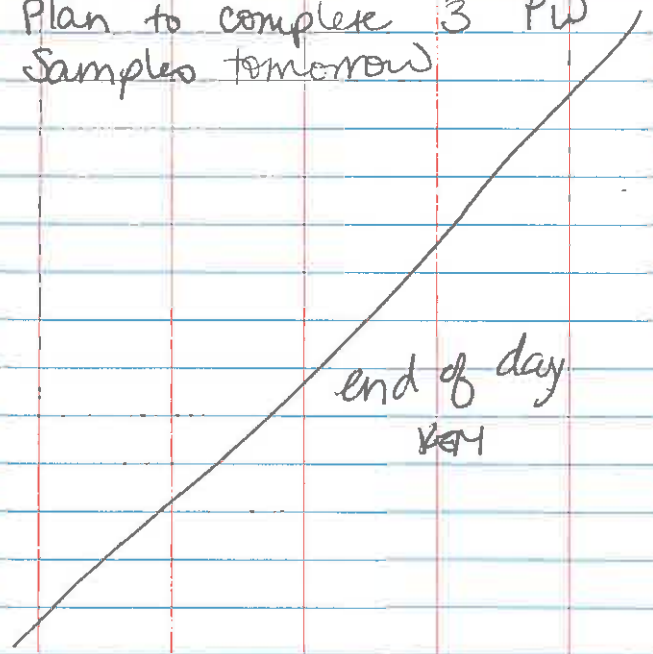
Gulfco Marine 8/24/10

1457 arrive at E/WSED06-PW - and begin emptying sediment at site.

1501 mob back to house

1509 arrive back at house unload boat

1515 finish for the day. Plan to complete 3 PW samples tomorrow



Gulfco Marine 8/25/10

0715 Depart Hotel

0735 Arrive at site - BESI not out yet

WEATHER: Sunny, hot, high of 93°F.

PLAN FOR DAY: Meet between 0730 and 0800 for 0800 departure for first sample location. Plan to collect and process 3 pore water stations

Personnel onsite: EA - Kaitlin McCormick
BESI - Neil Hawthorne
Brett Soutar
Scott Beauchamp

0750 BESI personnel arrive and begin loading boat

0807 BESI prepares equipment blanks

Note from Neil - equipment blank for AVS not sent to lab - lab indicated they could only run the analysis on solids

Gulfco Marine 8/25/10

0810 Calibrated YSI - also started collecting equipment blanks

~~0820~~ 0830 mob to E1WSED07-PW

0836 arrive at E1WSED07-PW

0837 begin collection of sediment 1st grab - 5 gallon bucket rinsed with site water before filling bucket with sediment

Sediment scooped from Ponar with stainless steel spoon that had been deconed. Ponar cleaned before use. Pump used to remove surface H_2O

0844 Ponar grab #2 Sediment scooped as with first grab.

0850 Ponar grab #3 2 photos taken

Gulfco Marine 8/25/10

0857 a barge passed over the sample location. Waiting until 0905 to sample

0908 Grab #4 - sample collected Same as previous

0913 Grab #5 - sample collected Same as previous grabs

0923 take water quality measurements Depth 7.7 ft

Bottom reading - 6.7
mid - 3.8 ft

	Bottom	mid	Surface
Temp(°C)	27.76	27.78	27.77
Cond(mS/cm)	58.97	59.00	59.00
Sal(ppt)	37.13	37.14	37.14
pH	7.90	7.87	7.85
ORP	-182.7	-220.2	-198.7
DO(mg/L)	4.14	4.07	4.04

All buckets of sediment put on ice.

Gulfco Marine 8/25/10

0924 KM
~~0827~~ Soil readings

ORP -27.3
pH 6.70
Temp 29.1 °C

0930 rinse sonar at site

0931 mob to house for processing.

0940 arrive at house and unload boat

0947 fill bottles and prep bottles for centrifuge to collect EIWSE07 pore water.

0951 sample homogenized - before filling bottles - tool de-caned before use

0954 rinsed homogenization equipment.

0956 begin filling sample bottles using de-caned spoon. jars for centrifuge are

Gulfco Marine 8/25/10

clean and new

2 photos taken

1010 balanced jars for centrifuge

1016 first centrifuge started - will run for 15 minutes at ~3500 rpm

1019 2nd centrifuge started - will run for 15 minutes at ~3500 rpm

1034 3rd centrifuge started - will run for 15 minutes at ~3500 rpm

1043 first recovery of EIWSE007-PW collected → 1st syringe full only
Run 1 - 60 mL + more should be adequate recovery from same.
used same syringe/filter method as previously

Gulfco Marine 8/25/10

1045 one crew member emptying and refilling centrifuge bottles with material while another crew member continues collection of pore water from bottles run.

photo taken of water collection

1107 - begin 2nd round of centrifuging after balancing bottles.

1112 - 1st centrifuge run of 2nd round

1128 - 2nd centrifuge run of 2nd run

1136 - 3rd centrifuge run of 2nd round

Continue to process water as samples are available after centrifuging

Gulfco Marine 8/25/10

1152 #7 started (1st one of round 3)

problems with centrifuge - rebalance needed 12c3

1217 #7 re-started after balancing

1232 - equipment blank for marsh site taken - EWSED08-PW-EB

1238 - process run #7

1246 - finished processing EWSED07-PW

1249 - Pore water transferred from 5 gallon container to new 1 Liter amber bottles for laboratory analysis

1253 Break for lunch

~~1212~~ 1312 resume work - load ATV

8/25/10

Gulfco Marine

13 km
1214 mob. to EWSED08-PW

13 km
1218 arrive at EWSED08-PW

1319 begin sample collection vegetation cleared from sample area before collection.
Soil collected using a decontaminated stainless steel shovel and transferred into a new, clean 5 gallon bucket

photo taken x3

Samples collected to depth of:
Shovel - ~1 foot

1325 - soil readings taken
ORP : 140.2 mV
Temp : 32.2 °C
pH : 5.41

1328 - finish sample collection
1330 - mob to house for processing.

Gulfco Marine 8/25/10

1334 return to house and unload equipment

1336 rinse off shovel into 5 gallon bucket
unload truck/ATV

5 gallon buckets put on ice.

1339 homogenized first bucket (1 of 3) of material from EWSED-PW with cleaned, de-contaminated equipment

Sample very clayey - hard to homogenize. material not well mixed but pore water will be mixed before bottling for lab.

1343 begin transferring soil into centrifuge bottles. bottles are clean and new.

1348 begin balancing 1st set of centrifuge jars

Gulfco Marine 8/25/10

1353 1st set of 1st run put in centrifuge for ~30 minutes at 3500 rpm

~~13~~

1402 2nd set of 1st run put in centrifuge for ~30 minutes at 3500 rpm

1409 3rd set of 1st run put in centrifuge for ~30 minutes at 3500 rpm

1426 begin collecting pore water - using same methods as previous pore water collection.

1436 1st set of 2nd run put in centrifuge for ~30 minutes at 3500 rpm

Switched method of extraction. Pore water cloudy. Water composited from multiple

Gulfco Marine 8/25/10

sets into another clean centrifuge bottle by decanting water into jar. The pore water will be centrifuged again and then brought into the syringe and filtered. Composite jar of PW kept on ice

1511 2nd set of ~~3rd~~ 2nd run started - to run for ~30 minutes at 3500 rpm

1528 3rd set of 2nd run started to run for ~30 minutes at 3500 rpm

~~1542~~ 1545 ~~4th~~ 3rd set of ~~3rd~~ 2nd run started. will run for ~30 minutes at ~3500 rpm

1549 1st set of 3rd run started will run for ~30 minutes at ~3500 rpm

centrifuge stopped - rebalanced jars and restarted at 1602

Gulfco Marine 8/25/10

1609 2nd set of 3rd run started at ~3500 rpm for 30 minutes

2 photos taken

1648 3rd set of 3rd run started at ~3500 rpm for 30 minutes

Photo of pore water bottles

1730 - Centrifuged pore water composites before filtering run for ~15 minutes at 3500 rpm

1750 begin filtering pore water and placing in 5 gallon container.

1823 Samples transferred to jars and placed on ice

1825 done for day.

end of day JCEM

Gulfco Marine 8/~~25~~/10 26 KM

WEATHER: hot, sunny, high forecast of 96°F

PLAN FOR DAY: COLLECT and process two marsh stations for pore water

0730 depart hotel

0745 arrive onsite. Crew ~~to~~ am is cleaning and de-contaminating equipment for use today, and load ATV

Personnel onsite: EA - Kaitlin McCormick
BESI - Neil Henthorne
Brett Soutar
Scott Beauchamp

0808 mob to site EWSED02-PW

0813 arrive on site, begin collection of sediment using same method of collection used at ~~0~~ am EWSED08-PW
photos taken x 4
Standing water at site has receeded noticably at the site since we visited the area on Tuesday 8/24

Gulfco Marine 8/26/10

0821 - Soil readings taken at EWSED02-PW
pH 6.89
Temp 27.5 °F °C
orp -273.8 mV

0821 - Completed soil collection - 3 five gallon buckets worth. All soil collected from areas at location not previously disturbed by earlier sample collection.

0826 mob to house for processing

0830 arrive at house - and put buckets of soil on ice

0831 prep for processing

0835 decon of tools used to collect sample EWSED02-PW

0836 begin filling centrifuge bottles - bucket not homogenized before material used to fill bottles

0849 1st set of 1st run started (#1) will run 30 mins @ ~3500 rpm

photo taken of placement of soil into jars.

Gulfco Marine 8/26/10

photo of jars prepped for centrifuge

0900 2nd set of 1st run started (#2) will run for ~30 minutes at 3500 rpm

0903 3rd set of 1st run started (#3) will run for ~30 mins at 3500 rpm.
Centrifuged needed to be restarted - restart began at 0906

Note: not previously written, but there has been a health and safety meeting each morning before starting work.

0924 1st set of 2nd run started (#4) will run for ~30 minutes at 3500 rpm.

0925 about 650 mL recovery from #1 - sufficient water to assume adequate recovery at this station.

Centrifuge jars to be emptied and re-used for this sample only

Gulfco Marine 8/26/10

0933 ~600mL recovery from #2
0946 ~500mL recovery from #3

0952 2nd bucket of sample opened - not homogenized before use.

1000 2nd set of run 2 (#5) started in centrifuge for 30 mins at ~3500 rpm

1004 2 photos taken
~500 mL recovery from #4

1022 3rd set of run 2 (#6) started in centrifuge for 30 mins at ~3500 rpm

1034 ~500mL of recovery from #5

1058 ~500 mL (estimate) of recovery from #6

1100 Pore water not in centrifuge jars as composites for PW run, extracted w/ syringe. This water would not fit in the four bottles for the water run

1100 Pore water centrifuge run started. To run 15 mins at ~3500 rpm.

Gulfco Marine 8/26/10

1103 - Extracted water on ice between runs.

1120 begin filtering pore water and putting into clean 5 gallon jug.

1142 - transferred pore water to jars for analytical laboratory
2 photos taken - one of filtering and one of transfer

1153 mob to EWSED01-PW

1157 arrive at EWSED01-PW
took photo of site. Site noticably drier than it was on Tuesday

1158 Sample collection begins. Sample collected in same manner as EWSED08-PW. Collected top 6" of soil, vegetation cleared before sample collection.
3 photos taken.
Soil collected from undisturbed areas at sample location.
1 additional photo taken

Gulfco Marine 8/26/10

1207 took soil readings
ORP 88.4 mV
Temp 29.3 °C
pH 6.59
1208 mob back to house to process soil (EWSED01-PW)
1213 arrive at house
1214 put soil buckets on ice. 3 buckets were collected prep bottles and spoons for filling of centrifuge bottles - decontaminated/cleaned spoons
1219 begin filling centrifuge bottles did not homogenize bucket before using soil to fill bottles.
1239 balanced first two sets of filled centrifuge bottles.
1243 Started first set of 1st run (#1) at ~3500 rpm for 30 minutes:
1246 Started 2nd set of 1st run (#2) at ~3500 rpm for 30 minutes
1311 Started 3rd set of 1st run (#3) at ~3500 rpm for 30 minutes
1318 Started 1st set of 2nd run (#4) at ~3500 rpm for 30 minutes

Pore water methods

Gulfco Marine 8/26/10

1318 begin transferring pore water to water centrifuge bottle
~290 mL of pore water from run #1 (set #1)
~300 mL of pore water from #2
~~run #3 - not started yet~~ ~~Started at 3520 rpm for 30 min~~
1328 break for lunch
1343 resume working
1343 Centrifuge for run #3 had stopped - restarted and run for 20 minutes at 3500 rpm
1358 Run 4 has ~325 mL of pore water
1408 Run 3 has ~250 mL of pore water
1415 run #5 started. ~3500 rpm for 30 mins
1423 run #6 started, will run at ~3500 rpm for 30 minutes
1442 run #7 started. ~3500 rpm for 30 minutes
1447 run 5 has ~250 mL of Pore water
1449 run #8 started at 3500 rpm for 30 minutes

Gulfco Marine 8/26/10

1459 ~225 mL of recovery from #6.

1511 #9 started (3rd set, 3rd run) on centrifuge to run for 30 minutes at ~3500 rpm - Centrifuge unbalanced - rebalanced and restarted at 1536 - still unbalanced

1523 #10 started (1st set, 4th run) on centrifuge to run for 30 minutes at ~3500 rpm

1523 ~250mL recovered ~~for~~ from #8

1524 #10 off balance - rebalanced and restarted at 1532

1527 ~250mL recovered from #7

1547 - #9 restarted in new centrifuge

Gulfco Marine 8/26/10

1548 - First centrifuge #9 was in run on empty - no problem with run on empty.

1600 - crew packing coolers while centrifuges run

1617 - #11 (4th run, 2nd set) started - will run for 30 minutes at 3500 rpm

Run #~~9~~ 10 had ~250mL of recovery

1620 #~~12~~ 9 had ~250mL of recovery

1643 #12 (4th run, 3rd set) started - will run for 30 minutes at 3500 rpm.

1650 #11 had ~250mL of recovery

1704 #13 (5th run, 1 set) started - will run for 30 minutes at 3500 rpm

1726 ~200 mL of recovery from #2

Gulfco Marine 8/26/10

Neil and Scott went to collect recon samples of EWSED04-PW and EWSED07-PW because moisture is being lost from the soil in the dry heat - two centrifuge jars of soil will be collected from each location and run to see if pore water collection is reasonably feasible at those locations still.

1737 recon samples from EWSED04-PW and EWSED07-PW run

1740 ~175 mL of pore water from #13

1743 pore water composites run for 15 mins at ~3500 rpm

1744 pore water not fitting into the 4 centrifuge bottles of pore water was extracted with a syringe and filtered into the new, clean 5 gallon container for pore water at EWSED01-PW.

Gulfco Marine 8/26/10

1800 begin filtering composite pore water samples using a syringe and filter - same as procedure for EWSED02-PW

1820 - 40 mL recovery from 2 jars at EWSED04-PW
45 mL recovery from 2 jars at EWSED07-PW

Should be doable in ~15 to 16 sets (5+ runs) for absolute minimum needed by lab - 1.1L

1825 ~~1825~~ EWSED01-PW transferred to bottles for analytical laboratory.

~~16~~ 12 KM
1829 pore water samples put on ice until shipping.

1830 Finish for day
1835 depart site for hotel

end of day
KEM

Gulfco Marine 8/27/10

WEATHER: hot, sunny, high in mid-90s
Plan for day: Collect and process one sample from marsh

0733 depart hotel for site
0748 arrive at site - crew completing decon of equipment to be used
0755 take equipment blank
0758 mob to EWSED04-PW
0803 arrive at EWSED-PW
0804 cleared vegetation from sample area
0805 begin sample collection
! 2 photos taken
collection method same as previous sites
4 buckets of soil collected
Top 6" of soil collected
0813 Soil readings taken
ORP 103.0 mV
Temp 27.9 °C
pH 7.05

Note: Soil was collected in new, clean 5 gallon buckets.

Gulfco Marine 8/27/10

0815 mob to house for processing
0818 arrive at house
buckets loaded into coolers and iced
0820 Centrifuge bottles (new and clean) filled with soil using cleaned stainless steel spoon.
bucket not homogenized before filling bottles

0820 - shovel from sample collection cleaned.

0830 centrifuge bottles for 1st set balanced - crew continues filling bottles while ~~centrifuging~~ centrifuging takes place. During previous samples bottles were reused for that sample only. Crew have sufficient bottles remaining to not reuse bottles for this sample - each centrifuge run to have new bottles

0834 1st set started (#1) in centrifuge to run 30 minutes at ~3500 rpm

Gulfco Marine 8/27/10

Personnel onsite on 8/27/10:
EA - Kaitlin McCormick
BESI - Neil Henthorne
Scott Beauchamp
Bret Soutar

Also - no health and safety meeting held before starting work.

0839 2nd set started (#2) in centrifuge to run for 30 mins at ~3500 rpm

0845 3rd set started (#3) in centrifuge to run for 30 minutes at ~3500 rpm

0852 Health and Safety breifing

0914 - #2 had ~~~50~~ ~70 mL of porewater
#1 had ~70 mL of porewater

0922 - 4th set started (#4) in centrifuge to run for 30 minutes at ~3500 rpm

Gulfco Marine 8/27/10

0925 - 5th set started (#5) in centrifuge to run for 30 mins at 3500 rpm

0927 - #3 had ~150 mL of porewater

0934 - 6th set started (#6) in centrifuge to run for 30 minutes at 3500 rpm. Not balanced properly - re balanced and restarted at ~~1005~~ 9573 after retrying original set - without success - a new set replaced it. Those jars will be re done in another machine

1001 - #5 had about ~40mL of recovery

1002 - 7th set started (#7) in centrifuge to run for 30 mins at 3500 rpm

1007 - ~80 mL recovered for #4

1010 - 8th set started (#8) in centrifuge to run for 30 minutes at 3500 rpm

Gulfco Marine 8/27/10

1026 #9 (set 9) started in centrifuge for 30 mins at 3500 rpm

about 100 mL recovery from #6 - same procedures used today that were used on 8/26/10

1036 #10 (set 10) started in Centrifuge for 30 minutes at 3500 rpm

~100 mL recovery from #7

1053 #11 started in centrifuge for 30 minutes at 3500 rpm

~70 mL of recovery from #8

1057 #12 started for 30 minutes at 3500 rpm

~100 mL of recovery from #9

Gulfco Marine 8/27/10

1112 #13 started for 30 minutes at ~3500 rpm

~100 mL of recovery from #10

1131 #14 started for 30 minutes at ~3500 rpm

#12 had ~80-100 mL of recovery

1133 1433 #14 off balance - rebalanced and restarted at 1142

1136 #15 started for 30 minutes at ~3500 rpm

1149 #13 had ~50-60 mL of recovery

1149 #14 off balance again. restarted in a different machine at 1162 for 30 minutes at 3500 rpm.

Gulfco Marine 8/27/10

1217 ~50-60mL of recovery from #14

1234 ~80 mL of recovery from #15 porewater bottles balanced and placed in centrifuge
photo taken - #100-6127

1237 run for 15 minutes at ~3500 rpm - EWSED04-PW

1238 Break for lunch

1412 return from lunch - resume sampling

1414 begin syringe/filter process - same as done yesterday, 8/26/10

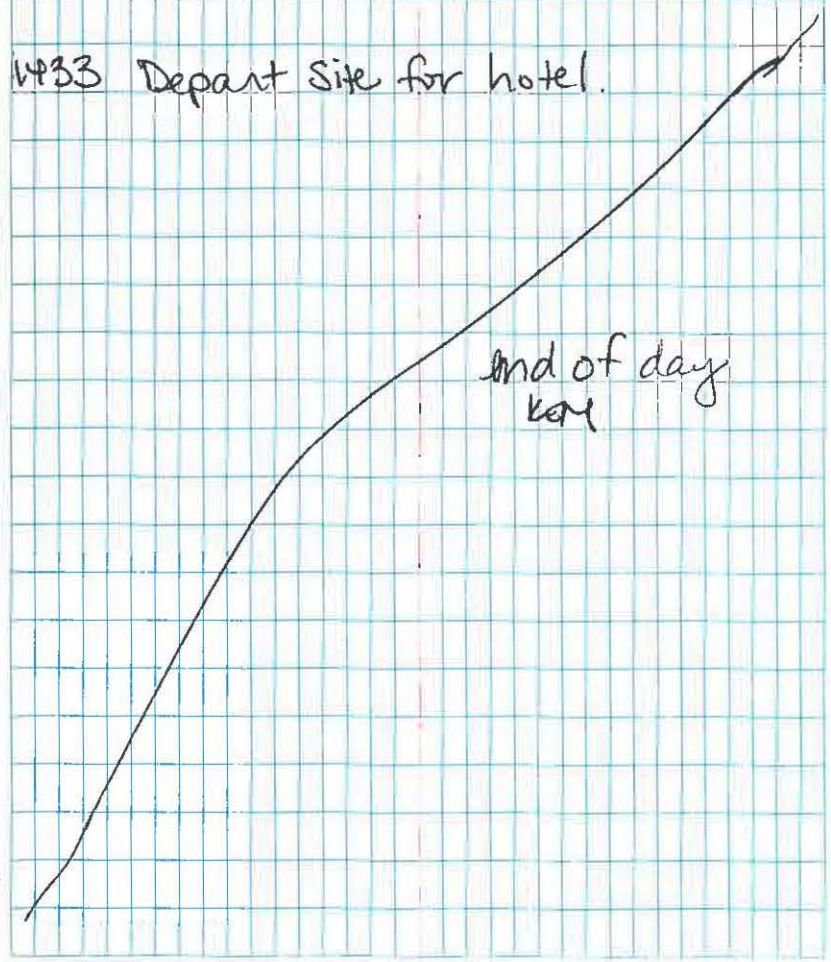
1420 complete filtering transfer water from 5 gallon container to analytical jars.

1422 pack coolers and prep for shipment

Gulfco Marine 8/27/10

1430 finished for the day - plan to resume tomorrow at 0800 to collect and process EWSED07-PW.

1433 Depart site for hotel.



Gulfco Marine 8/28/10

Weather: hot, sunny, high ~96
clear skies

Plan for today: collect and process EWSED07-PW

Personnel onsite: BESI Neil Henthorne
EA Kaitlin McCormick

To be joined this morning by William Quast from BESI

0730 depart Hotel
0748 arrive onsite
personnel have already loaded ATV with equipment for mob
0803 mob to EWSED07-PW
0807 arrive at EWSED07-PW
0808 begin Sample Collection - Same method as previous pore water samples -
3 photos taken
4 buckets collected

Gulfco Marine 8/28/10

0815 Soil readings taken
Temp 20.9 °C
ORP 257.7 mV
pH 6.96

0817 mob to house
0820 arrive at house for processing of soil.

Note: Neil received notification at 1900 last night (8/27/10) that two pore water sample bottles broke in transit on way to lab. Add'l water to be collected from that site on monday 8/30/10

0822 Clean/decon of sampling equipment. Shovel and boots hosed off - but just rinsed into adjacent channel rather than a bucket as was done previously.

0830 put buckets on ice except the one to be used for processing.

Gulfco Marine 8/28/10

0836 prep centrifuge bottles for filling and processing.

0846 begin filling jars bucket not homogenized before filling jars, Same procedure as previous samples William Quest arrived

0912 Centrifuge set 1 started (#1) at ~3500 rpm for 30mins.

0917 Set 2 started - #2 at ~3500rpm for 30mins

0923 Set 3 (#3) started at 3500 rpm for 30 minutes

0950 #1 had ~130 mL of recovery
#2 had ~110 mL of recovery

0957 #4 (set4) started at ~3500 rpm for 30 minutes

1000 #5 (set5) started at ~3500 rpm for 30 minutes

Gulfco Marine 8/28/10

1006 - ~200 mL recovery from #3

1009 - Set 6 (#6) started at ~3500 rpm for ~30 minutes

1037 - Set 7 (#7) started at ~3500 rpm for 30 minutes
Set 8 (#8) started at ~3500 rpm for 30 minutes

1039 photo taken of pore water removal from jars

~160mL of recovery from #4
~200 mL of recovery from #5

1054 Set 9 (#9) started at ~3500 rpm for 30 minutes

1056 #6 had ~160 mL of pore water

1113 Set 10 (#10) started at ~3500 rpm for 30 minutes

1115 ~200 mL of recovery from #8

Gulfco Marine 8/28/10

1115 #10 off balance - to be rebalanced and restarted

1116 #11 started (set 11) at ~3500 rpm for 30 minutes

Note: as of 1117 - no health and Safety breifing today.

1118 ~150mL of recovery from run #7

~~#36~~ KM

1137 Set 12 (#12) started at ~3500rpm for 30 minutes

#10 to be redone with new bottles - those being replaced will be re-weighed and used for another set. All the balancing problems today and yesterday were on the same centrifuge

1139 #10 off balance again.

Gulfco Marine 8/28/10

1140 ~100 mL of recovered pore water from #9

1155 ~160mL recovery from #11

1157 #10 started in new centrifuge for ~~1st~~ 30 mins at ~3500 rpm

1217 #13 started in centrifuge #10 was originally in with new bottles and after BE&I checked and rebalanced machine. One of the centrifuge cups found to be 2 grams lighter than rest.

1221 #14 set in centrifuge at ~3500rpm for 30 minutes

#12 had ~190 mL of recovery of pore water

1230 #10 had ~150 mL of pore water

Gulfco Marine 8/28/10

1231 #15 started will run for ~30 minutes at ~3500rpm

1248 ~200 mL recovered pore water from #13

1302 ~190 mL of pore water from #14

1311 ~150 mL of pore water from #15

1312 Balanced pore water centrifuge bottles for run

1315 Started pore water run - for 30 minutes at ~3500rpm

1320 break for lunch

1445 return from lunch.

1452 begin prep for filtering
2 photos taken

1455 begin filtering using a syringe and filter - same

Gulfco Marine 8/28/10

method as used for previous sample (ELWSED04-PW)

2 photos taken

KEM

1519 transfer sample to jars for analytical laboratory jars placed on ice will be shipped on Monday (7 day holding time)

1530 finish for day - demob until Monday, 8/30/10

Plan for Monday - collect surface water sample and recollect pore water sample that broke in transit. Sample collection should be complete after Monday.

end of day
KEM

Gulfco Marine 8/30/10

weather: hot, sunny, humid, high in mid-90s

plan for day: Collect the surface water sample from the marsh and recollect the pore water sample that broke (EWSED07-PW).

arrive onsite at 0860, BESI crew prepping for collection of sample at EWSED07-PW

Personnel onsite: EA - Kaitlin McCormick
BESI: Neil Henthorne
Scott Beauchamp
Brett Soutar

0916 - mob to surface water site
water ~~level/station~~ levels at the station have risen - due to a high tide.
EWSW-01

0923 arrive at surface water Station 1.

Gulfco Marine 8/30/10

0924 BESI to set tubing for surface water collection - will come back later after turbidity settles to collect the water sample.

0926 complete recon of other SW and PW sites. EWSW-04 is now sampleable because of high

EWSED06-PW also now has water and is collectable

returned to house

0932 arrive at house - checked map of SW stations - one add'l SW station may also be sampleable.

0937 mob to EWSW1-04

Gulfco Marine 8/30/10

0939 · arrive at EWSW-04 - photo taken - BESI to set out tubing similar to EWSW-04. Tubing set out into surface water area and attached to post in water. area allowed to settle before we return to collect SW sample. 2nd photo taken.

0941 mob to EWSW-03

0942 EWSW-03 is dry - no surface water for collection. return to house

0944 arrive at house

0945 prep for mob to intercoastal PW site

0950 Health and Safety breifing

0952 depart house for EIWSED07-PW by boat

Gulfco Marine 8/30/10

1001 Consulting GPS for exact sample location - Station marker submerged by high tide.

1005 Station marked with weight and buoy.

1006 prep for sample collection.

1008 Collect first grab at EIWSED07-PW sample collected using clean Van Veen - extra water drained off sediment surface with pump. Sample scooped using clean stainless steel spoon and placed in new 5 gallon bucket.

Equipment blank done at house while I was with the portion of team that was setting tubing for surface water samples.

1015 2nd grab collected at EIWSED07-PW grab not used - too far from sample point.

Gulfco Marine 8/30/10

repositioned boat.

1018 grab 3 collected at EIWSED07-PW
same procedure as 1st grab.

1023 grab 4 collected, same procedure as previous grab. - nothing collected but water in van veen - repositioned boat

1025 grab 4 collected, same procedure as grabs 1 and 3

1033 grab 5 collected, same procedure as previous grab
full 5 gallon bucket put on ice

1040 grab 6 collected, same procedure as previous grab
4 photos taken

1047 grab 7 collected, same procedure as grab 6

1057 grab 8 collected - no sediment only water. boat repositioned

1054 grab 9 collected, same procedure as grabs 6 and 7

Gulfco Marine 8/30/10

1056 marker buoy retrieved
prepare to take WQ readings

1102 Soil readings taken in sediment
pH 6.37
Temp 30.7 °C
ORP 113.5 mV

1107 water quality - EIWSED07-PW
depth 7.9'
mid - 3.5'

	Bottom	mid
Temp	29.57 °C	29.67 °C
Cond	59.36 µS/cm	58.49 µS/cm
Salinity	36.00 ppt	36.00 ppt
pH	~~7.47~~ 6.59	6.52
ORP	-196.3	-99.1
DO	7.71 mg/L	8.06 mg/L

	Surface	
Temp	~~29.67 °C~~	29.74 °C
Cond	59.35 µS/cm	
Salinity	35.95 ppt	
pH	6.52	
ORP	-204.3	
DO	8.01 mg/L	

Gulfco Marine 8/30/10

1117 rinse van veen in site water to remove sediment. Scrubbed with brush and alconox over water at site (not into a bucket)

1120 mob back to house for processing.

1130 arrive back at house- BESI crew unloading boat 2 buckets of sediment were collected at EIWSED07-PW

one man of BESI crew to fill centrifuge bottles, while remaining two members to collect surface water samples. prep for SW collection

1145 collect equipment blank for surface water samples

1158 BESI preps + homogenize 1st bucket of sediment from EIWSED07-PW

Gulfco Marine 8/30/10

1200 1st bucket of EIWSED07-PW homogenized using cleaned tools

photo taken

tool rinsed into 5 gallon waste bucket

1203 Surface water crew mobilized - first just Brett - Neil to follow after calling lab.

1208 arrive at site ~~ES~~ EIWSW-01 took photo of setup.

1210 begin pumping water into 5 gallon new sample containers for toxicity testing. 15 gallons to be collected.
2 photos taken

1223 begin filling 2nd 5 gallon container

1238 Begin filling 3rd 5 gallon container

Gulfco Marine 8/30/10

1242 WQ parameters taken by filling a cup with site water and then taken from the sample in cup

Temp	35.37 °C
Salinity	43.20 ppt
pH	5.86
Cond	77.38 µS/cm
DO	3.78 mg/L
ORP	-262.5 mV

1252 begin filling jars for other analyses - including MS, MSD, and field duplicate

1305 mob to house to get one more sample bottle for EWSW-01

1310 arrive at house

1313 EWSW-01 put on ice in cooler.

1325 mob back to EWSW-01 with replacement bottle.

1328 arrive at EWSW-01

Gulfco Marine 8/30/10

1329 Collect sample for replacement jar

1330 mob to EWSW-04

1331 arrive at EWSW-04 and set up sampling apparatus - photo taken

1333 begin sample collection - same method as used at EWSW-01 photo taken

1335 cup filled for WQ parameters - same as EWSW-01

1336 water quality readings:

Temp	35.91 °C
Cond.	75.53 µS/cm
Salinity	41.69 ppt

1344 begin filling 2nd 5 gallon container.

1348 read remaining WQ parameters.

DO	5.00 mg/L
pH	7.19
ORP	-280.6 mV

Gulfco Marine 8/30/10

1353 begin filling 3rd 5 gallon container

1403 begin filling jar For analytical laboratory

1404 Finish sample collection mob to house

1408 arrive at house - transfer samples to cooler

Begin Centrifuging - BESI Crew member filled and balanced jars - not run until I was back at site for oversight

1411 - Set 1 (#1) of E1WSED07-PW to run for 15 minutes at ~3500 rpm.

1413 Set 3 (#3) of E1WSED07-PW to run for 15 minutes at ~3500 rpm

1413 Set 2 (#2) of E1WSED07-PW to run for 15 minutes at ~3500 rpm

Gulfco Marine 8/30/10

1432 - #2 had ~530 mL of recovery from E1WSED07-PW

1438 Set 4 (#4) started to run for 15 minutes at ~3500 rpm run off balance - stopped

1441 #1 had ~520 mL of recovery

1443 #3 had ~550 mL of recovery

1444 Set 5 (#5) started to run for 15 minutes at ~3500 rpm

1446 KM Set 6 (#6) started to run for 1448 15 minutes at ~3500 rpm

1510 KM Set 4 (#4) re-started in a new machine - to run fo 15 minutes at ~3500 rpm

1511 #6 had ~580 mL of recovery

1514 #5 had ~500 mL of recovery

Gulfco Marine 8/30/10

1515 Set 7 (#7) started - will run for 15 minutes at ~350rpm

1345 begin filtering - pore water composites and filtering done same as ~~yesterday~~ Saturday (8/28/10) ~~(8/29/10) for~~ for EWSED07-PW. Samples today (EWSED07-PW) did not need the pore water composites to be centrifuged.

1553 ~900 mL pore water recovered from ~~#8~~ #4 ~~#7~~ km

1557 ~580 mL of pore water recovered from #7.

1615 Completed filtering

1622 begin pouring porewater into jars for analytical laboratory

1630 BESI to pack and ship samples to the lab - samples to be shipped are those collected Saturday (8/28)

Gulfco Marine 8/30/10

and today. One BESI crew member departed with the surface water samples earlier - only the 5 gallon containers - to drive them to the lab for toxicity testing.

Plan for tomorrow: Collect sample EWSED06-PW. This is the last remaining sample to be collected. after EWSED06-PW is collected, BESI will begin demobilization.

End of sample collection and processing at 1635, Shipping process has begun with packing of coolers

Oversight finished at 1636.

End of day
KEH

8/31/10 Gulfco Marine

0730 depart hotel
0745 arrive onsite - BESI
Crew ~~making~~ prepping for field work

Weather: hot, humid, high of 93

Plan for day - collect pore water sample EWSED06-PW

0805 Collect equipment blank - Placed on ice in cooler after collection

Personnel onsite: EA - Kaitlin McCormick
BESI - Neil Hawthorne
Scott Beauchamp

0820 Calibrated YSI and Soil meters

0833 Mob to EWSED06-PW
0836 arrive at EWSED06-PW
0837 begin sample collection - site has standing water - excess water drained from sample before placing in new 5 gallon bucket. Sample collected using cleaned Stainless Steel Shovel. Top 6" of soil collected. - 2 photos with cellphone camera - forgot regular camera

Gulfco Marine 8/31/10

0839 Site readings - water quality

pH	7.17
Temp	27.84 °C
Cond	51.66 mS/cm
Salinity	31.93 ppt
DO	3.80 mg/L
ORP	-54.2 mV

0843 Site readings - soil

Temp	29.1 °C
pH	6.4
ORP	30.8

0851 Complete sample collection - rinse shovel in site water to remove excess soil.
0852 mob to house
0854 arrive at house. - buckets placed on ice until used - 3 5gallon buckets of soil collected.

Gulfco Marine 8/31/10

0902 prep (label) centrifuge jars.

0906 begin filling jars - any water settling on surface of bucket also put in jar - not much water settled on surface. Soil is very moist. Bucket not homogenized before filling centrifuge bottles/jars.

0924 run 1, set 1 - (#1) started for 30 minutes at ~3500 rpm.

0934 run 1, set 2 (#2) started for 30 minutes at ~3500 rpm

0949 run 1, set 3 (#3) started for 30 minutes at ~3500 rpm

1003 ~550mL recovery from #1

1007 ~~start~~ run 2, set 1 (#4) started for 30 minutes at ~3500 rpm

Gulfco Marine 8/31/10

pore water from each set being transferred to the composite pore water jars

1017 run 2, set 2 (#5) started for 30 minutes at ~3500 rpm

1020 ~500 mL of recovery from #2

2nd bucket of soil not homogenized before using.

3rd bucket of soil not homogenized before using. Bucket 2 not fully emptied before starting bucket 3.

1037 ~250 mL of recovery from #3

1040 run 2, set 3 (#6) started for 30 minutes at ~3500 rpm centrifuge off balance

Gulfco Marine 8/31/10

1046 run 3, set 1 (#7) started for 30 minutes at ~3500 rpm

1049 ~500mL recovery from #4

1050 #6 restarted - off balance again.

1101 ~~set run~~ #6 restarted in a different centrifuge, for 30 mins at ~3500 rpm

1102 ~550 mL of recovery from #5

1128 ~575 mL of recovery from #7

1131 begin prepping jars for analytical lab - jars labelled

1143 ~200 mL recovered from #6 that would fit in Composite jars - Remaining to be filtered and syringed out of original centrifuge bottles

Gulfco Marine 8/31/10

1146 begin filtering pore water not being centrifuged

Start porewater set in centrifuge for 15 minutes at ~~45~~ ~3500 rpm

1153 total recovery ~435 mL from #6

1207 begin filtering Composite samples - same as previous PW samples - porewater pulled into 60mL syringe and then pushed through a 0.45 micron filter and into a 3 gallon new plastic container

1229 complete filtering, transfer sample to bottles for analytical lab

1233 completed filling of sample bottles for analytical lab

8/31/10 Gulfco Marine

bottles for lab put in individual ziploc bags, new, and placed on ice in cooler.

1235 - no further field efforts of sample collection. BESI to pack and ship samples and demob from site.

Oversight finished

1237 Depart site.